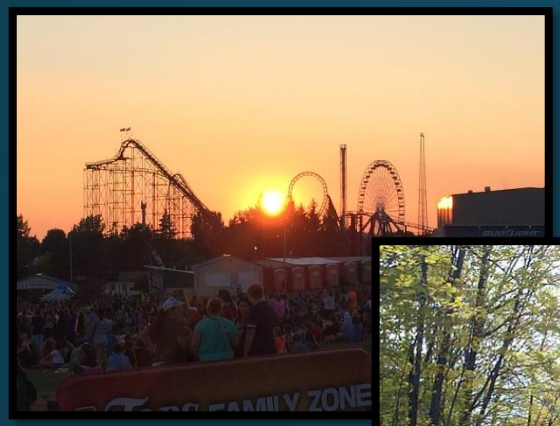



Green Genesee Smart Genesee Natural Asset Mapping

GLC Green Infrastructure Champions Workshop
May 30, 2019

Presented by Felipe Oltramari, Genesee County Dept. of Planning
Majority of the slides courtesy of Sheila Hess , CC Environment & Planning

In every deliberation we must consider the impact of our decisions on the next seven generations.

~Great Law of the Iroquois

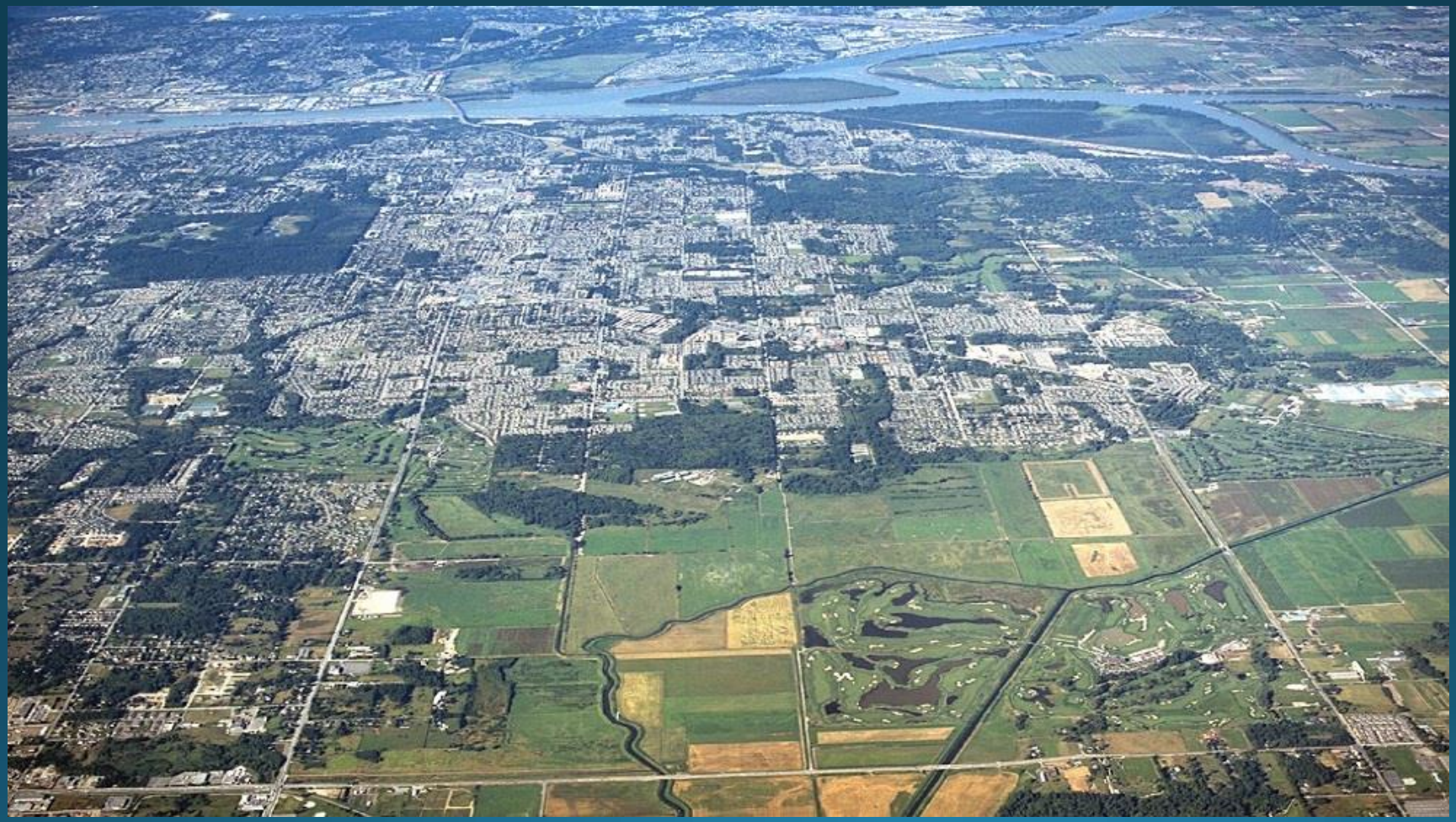
Connected

Land Use Planning - to further the welfare of people and their communities by creating convenient, equitable, healthful, efficient, and attractive environments for present and future generations - APA

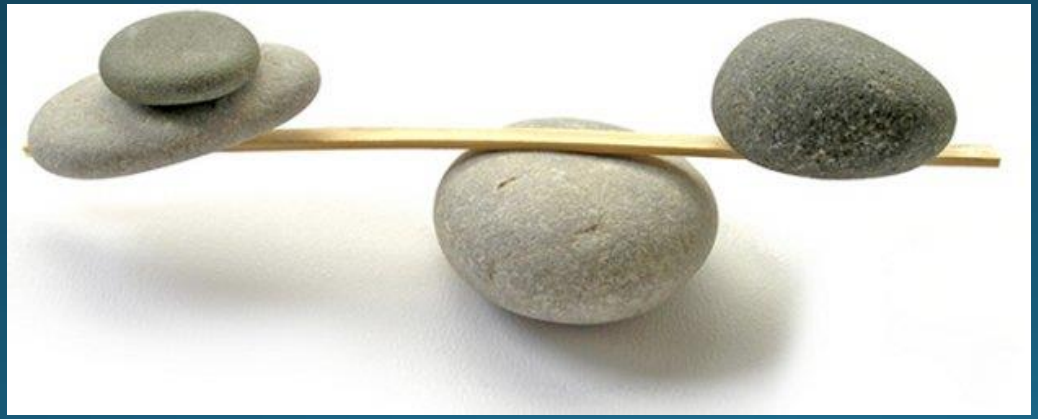
Why Plan?

- Fairness and efficiency
- Prevent or address land use conflicts
- Develop vision for the future
- Support community priorities
- Because everything is connected

Communities increasingly develop land use policies congruent with scientific data and with a focus on resilience.



Resilience depends on our ability to guide land use in a way that respects community values and economic opportunity, protects natural assets and ecological networks, retains farmland and conserves energy.

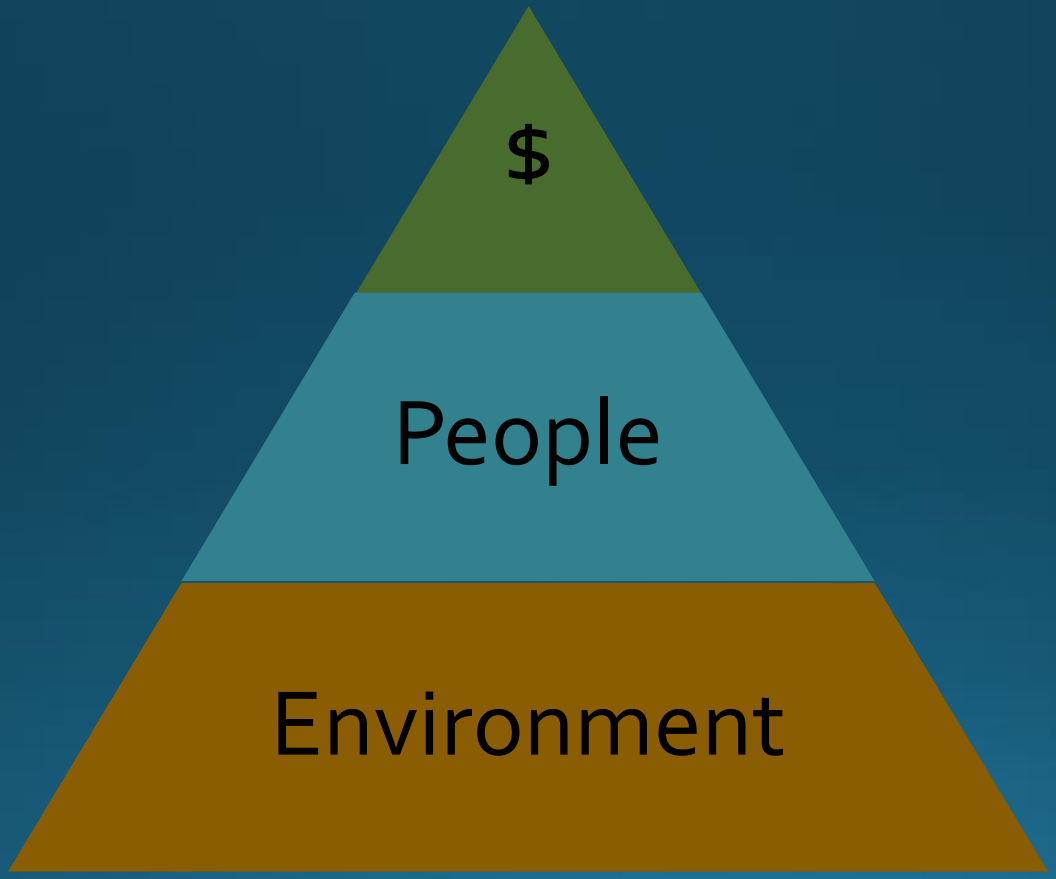


An intact ecosystem and wise energy use comprise the only foundation upon which true resilience is achieved.

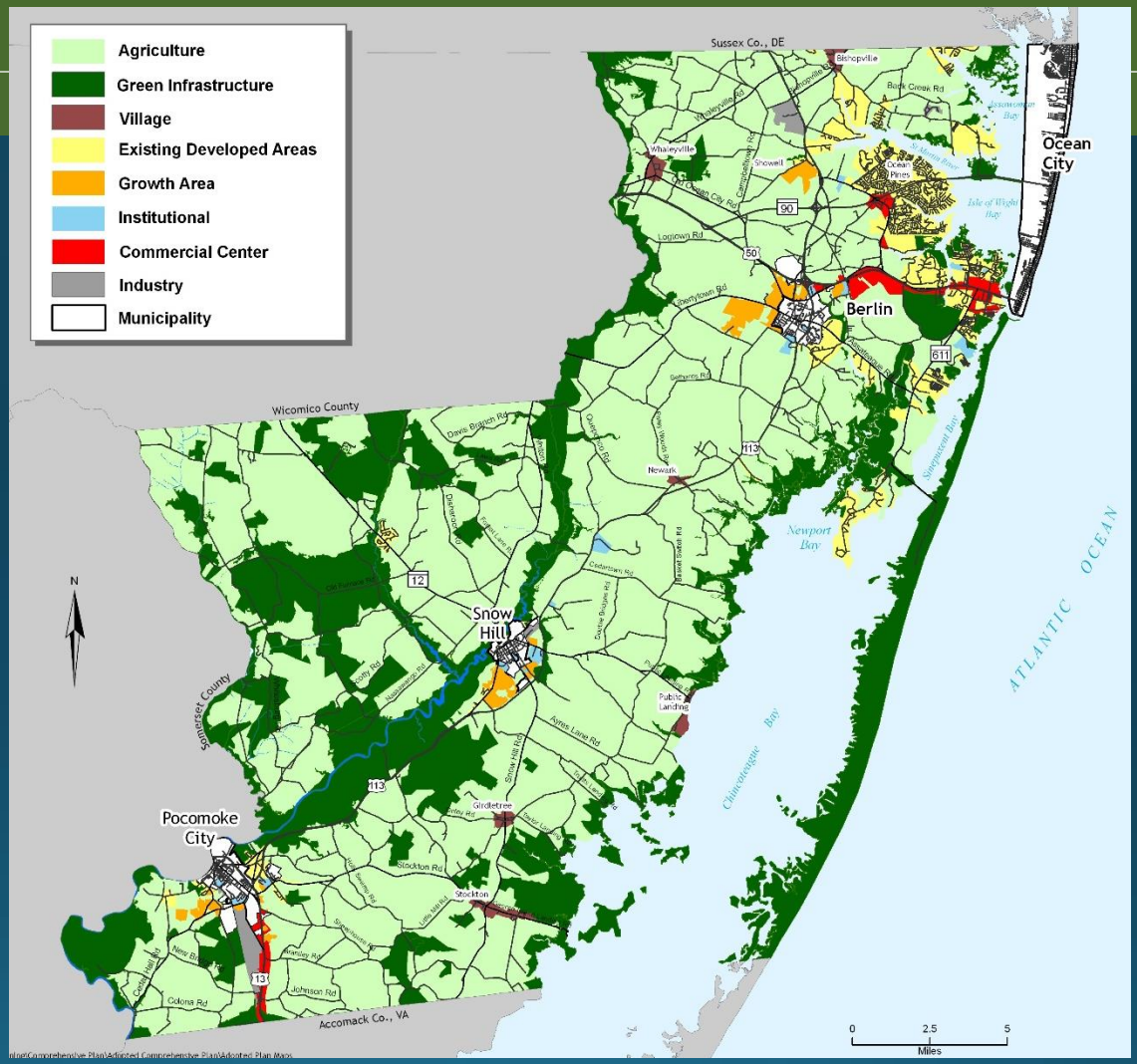
Fragmentation of natural resources, climate uncertainty, rising cost of energy, and a shifting economy call for decisive action and innovation.

4-7. Low-density rural sprawl consuming farmland and open space

An intact network of natural resources provides a core foundation for resilient communities



A land use plan establishes preferred areas for development, working lands, preservation and restoration of ecological networks, and social systems



Infrastructure

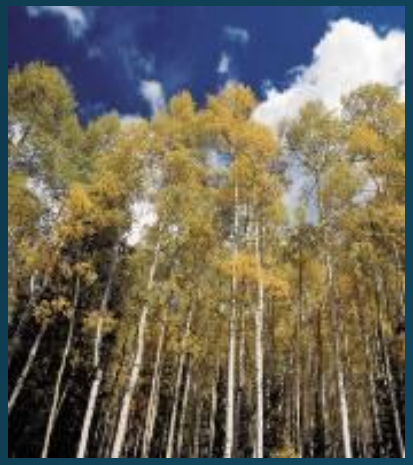
Gray Infrastructure

- Roads
- Bridges
- Power lines
- Pipelines
- Waste water
- Communications
- Etc.

Green Infrastructure

- Forest blocks
- Wetlands
- Rivers
- Streams
- Parks
- Farmland
- Etc.

A Green Infrastructure Approach



- Science-based inventory and assessment
- Integrates conservation with development and gray infrastructure
- Acknowledges need to live, work, shop and enjoy nature
- Optimizes land use
- A pathway to resilience

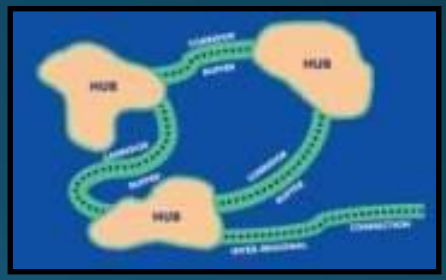
A Green Infrastructure Approach

Leadership Forum

✓Convening of stakeholder group to articulate vision, goals and objectives

Network Design

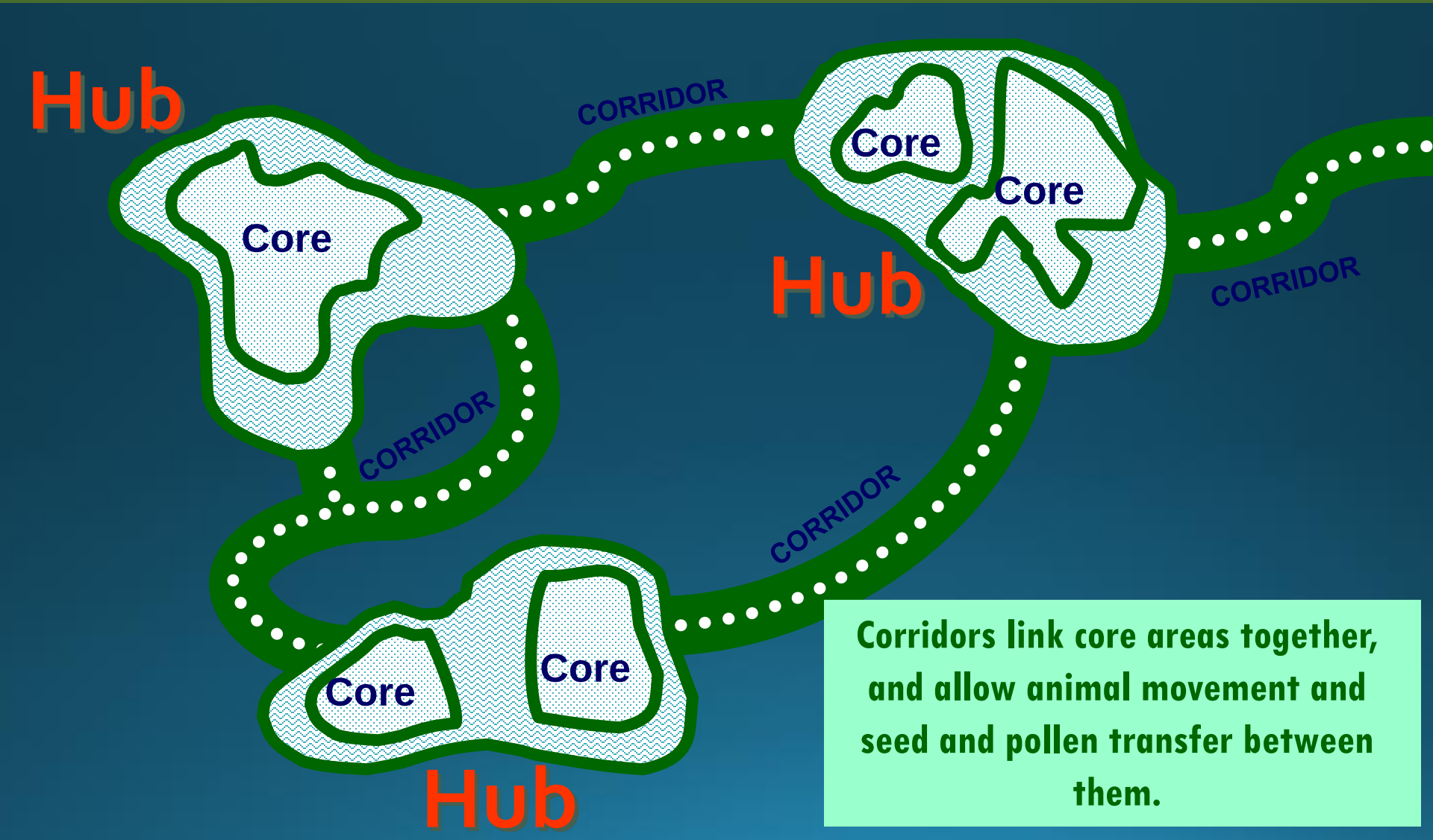
✓ Identification of key network lands



Implementation Quilt

✓ Formulation of a framework for matching available resources to the needs of the network

Green Infrastructure



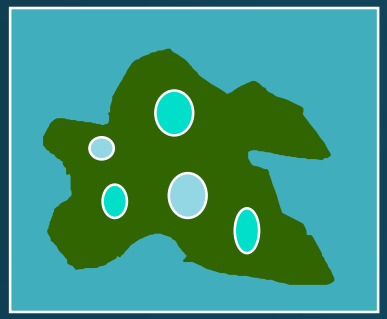
Corridors link core areas together, and allow animal movement and seed and pollen transfer between them.

Optimize Land Use

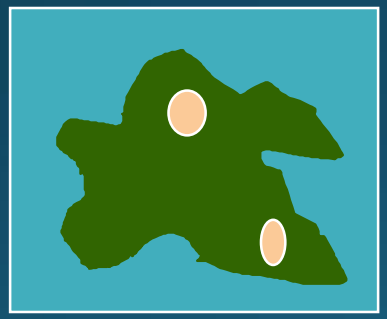
Reconnect with Corridors

Development Process

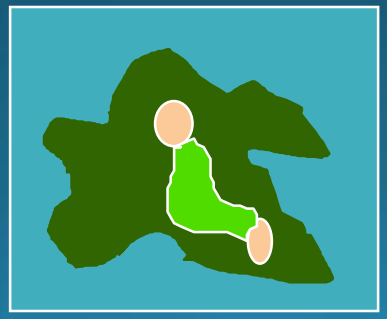
Key Analysis Steps



Step 1 - Identify:
Areas of Ecological Significance



Step 2 - Select:
Ecological Hubs

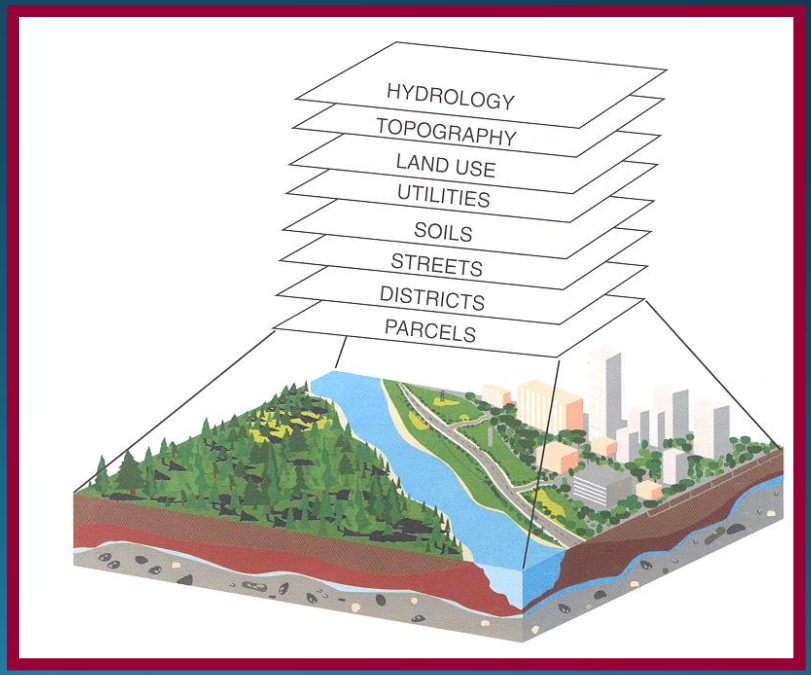


Step 3 - Delineate:
Landscape Linkages

Development Process

Data Layers for Identifying Priority Ecological Areas

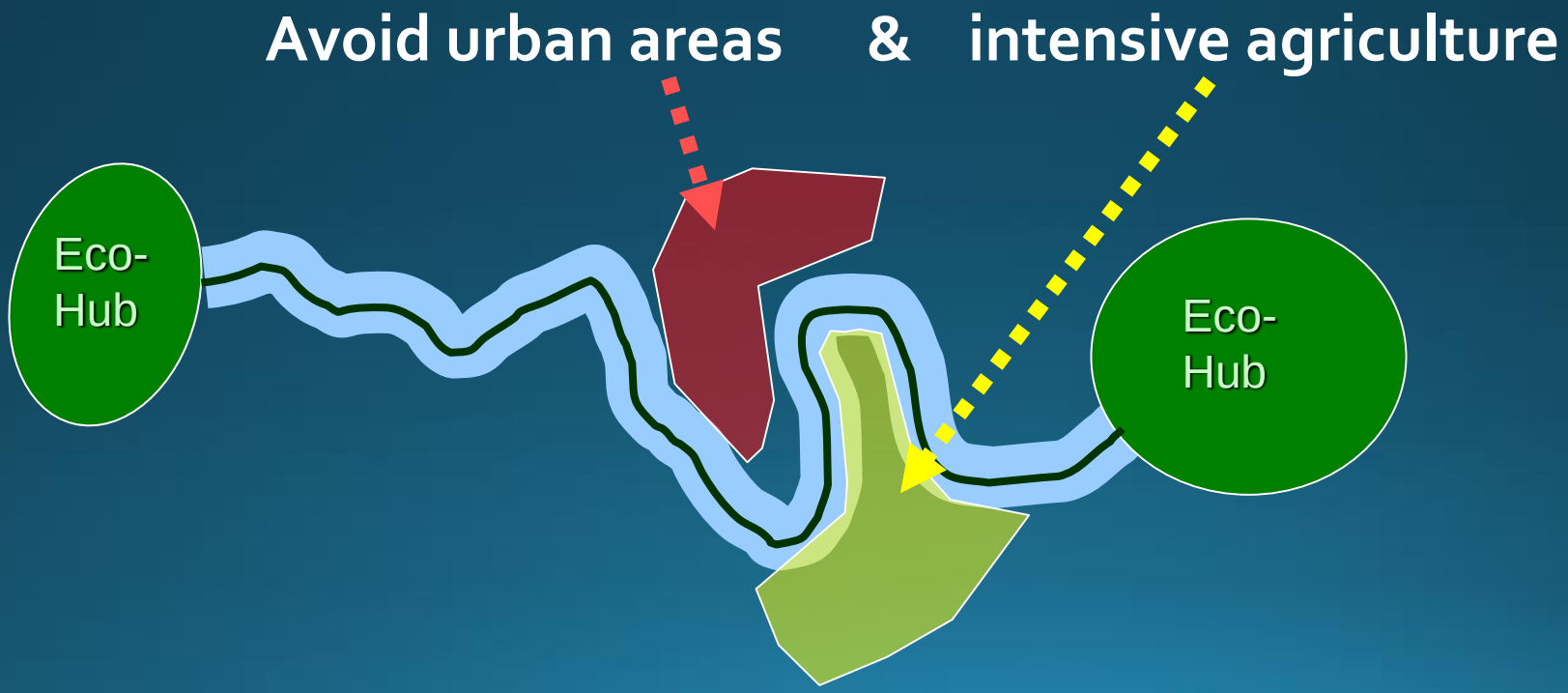
- Land Cover & Landscape Characteristics of Watersheds
- Natural Heritage Program Data & Species Analyses
- Existing & Proposed Conservation Lands
- Roadless Areas
- Priority Water Bodies & Wetlands
- Potentially Significant Habitat



Development Process

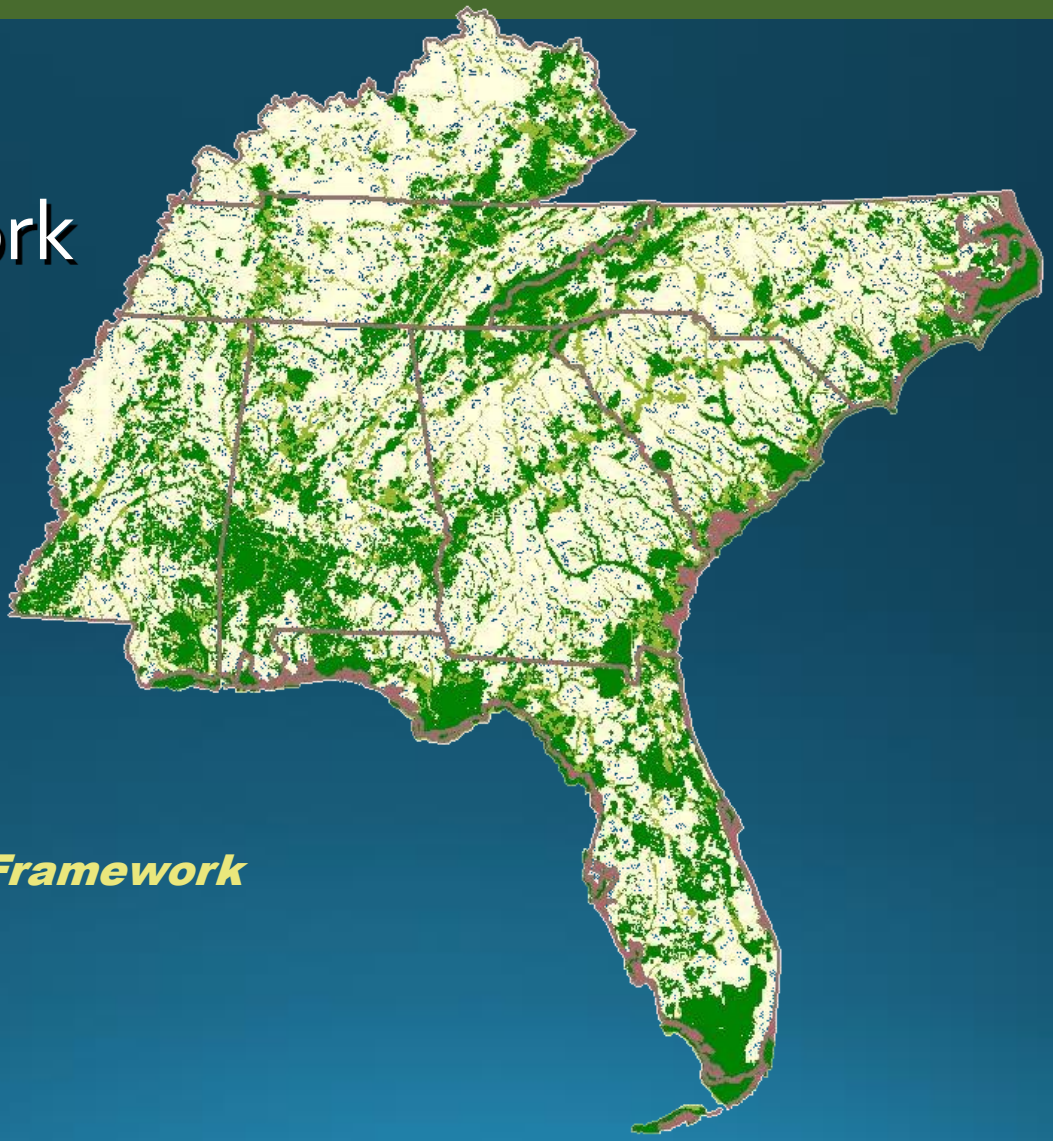
Ecological Cost Surface Analysis

Find a path between ecological hubs representing the best "ecological pathway" between the hubs. Cost is not monetary, but is ecological.



Case Studies

Southeastern Ecological Framework



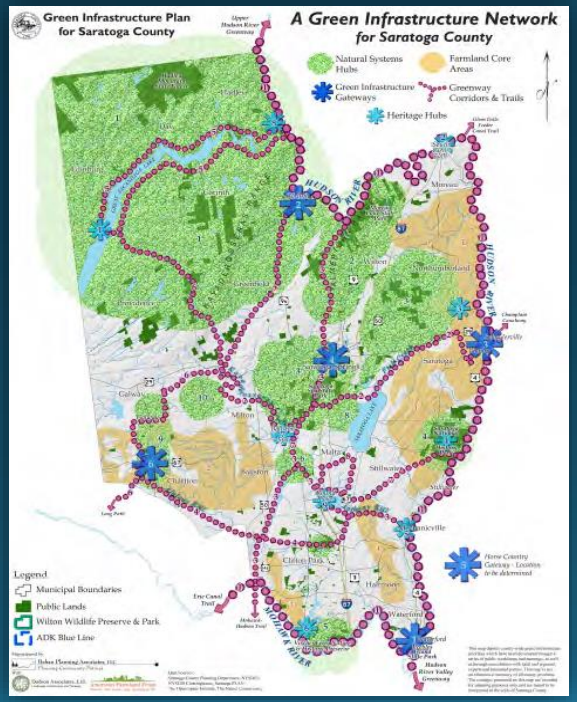
Ecological Hubs

Ecological Links

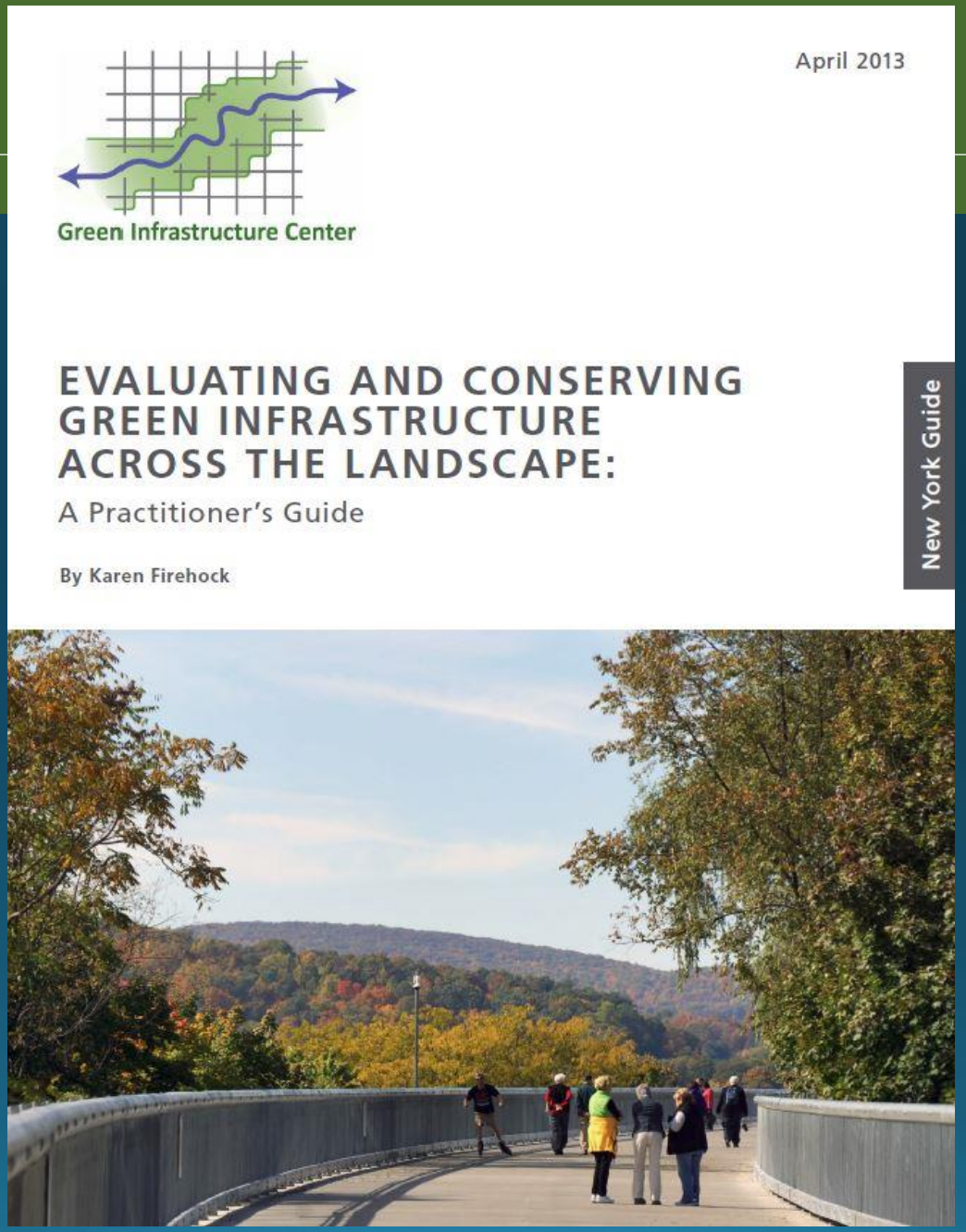
Not in the Ecological Framework

Case Studies: Saratoga County

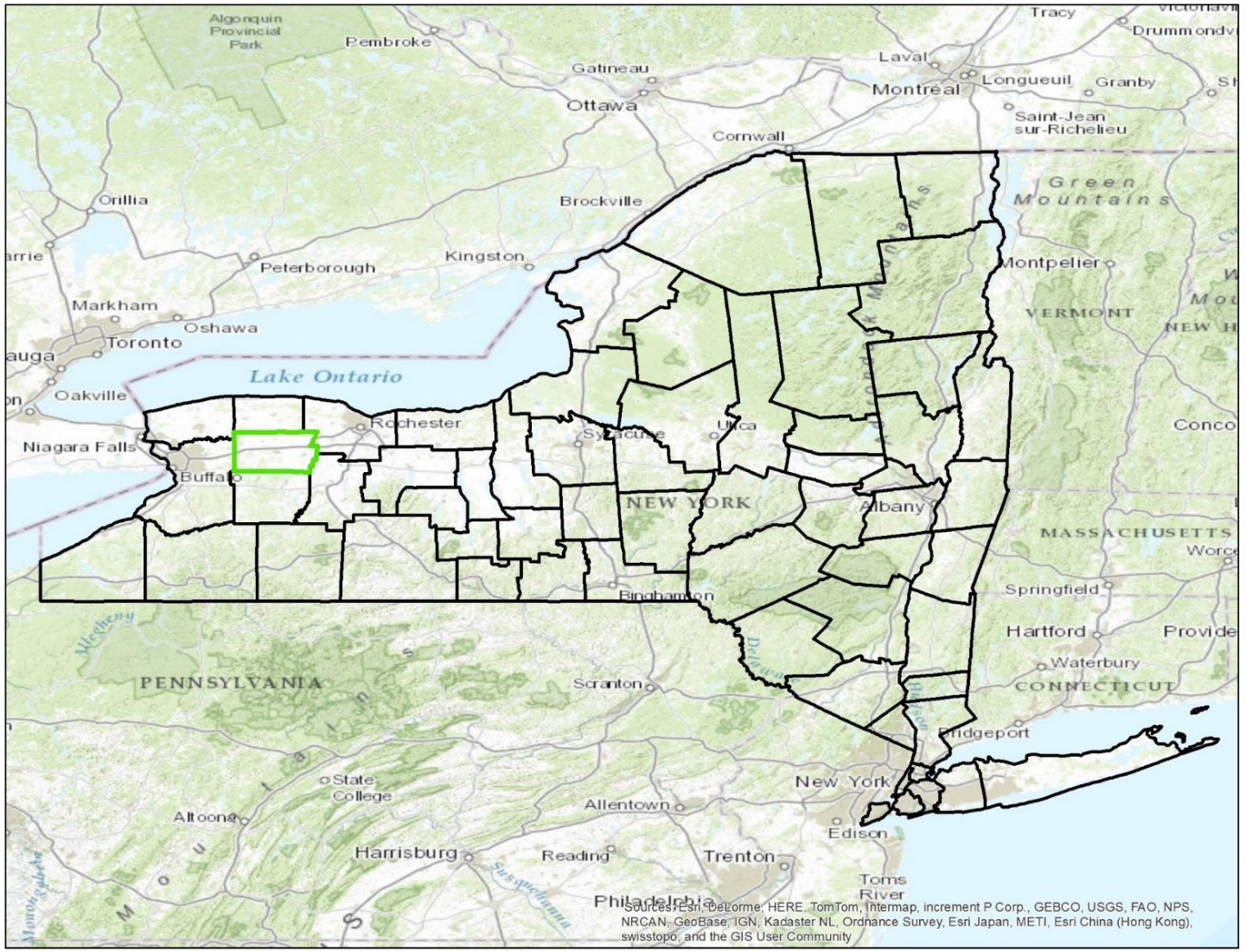
By protecting our green infrastructure we ensure the character of the county and abundant natural resources will be part of our economic prospect for current and future generations.



New York Guide



Case Study: Green Genesee Smart Genesee



CONSERVATION CONNECTS

Benefits of Green Infrastructure

Ecological Benefits

- Biodiversity
- Resilience
- Connectivity
- Fish and wildlife
- Decrease toxins
- Groundwater
- Floodplain
- Stream buffers
- Wetland/forests

Societal Benefits

- Clean water
- Public health
- Flood control
- Unity
- Recreation
- Reinvestment
- Aesthetics
- Sense of place
- Collaboration

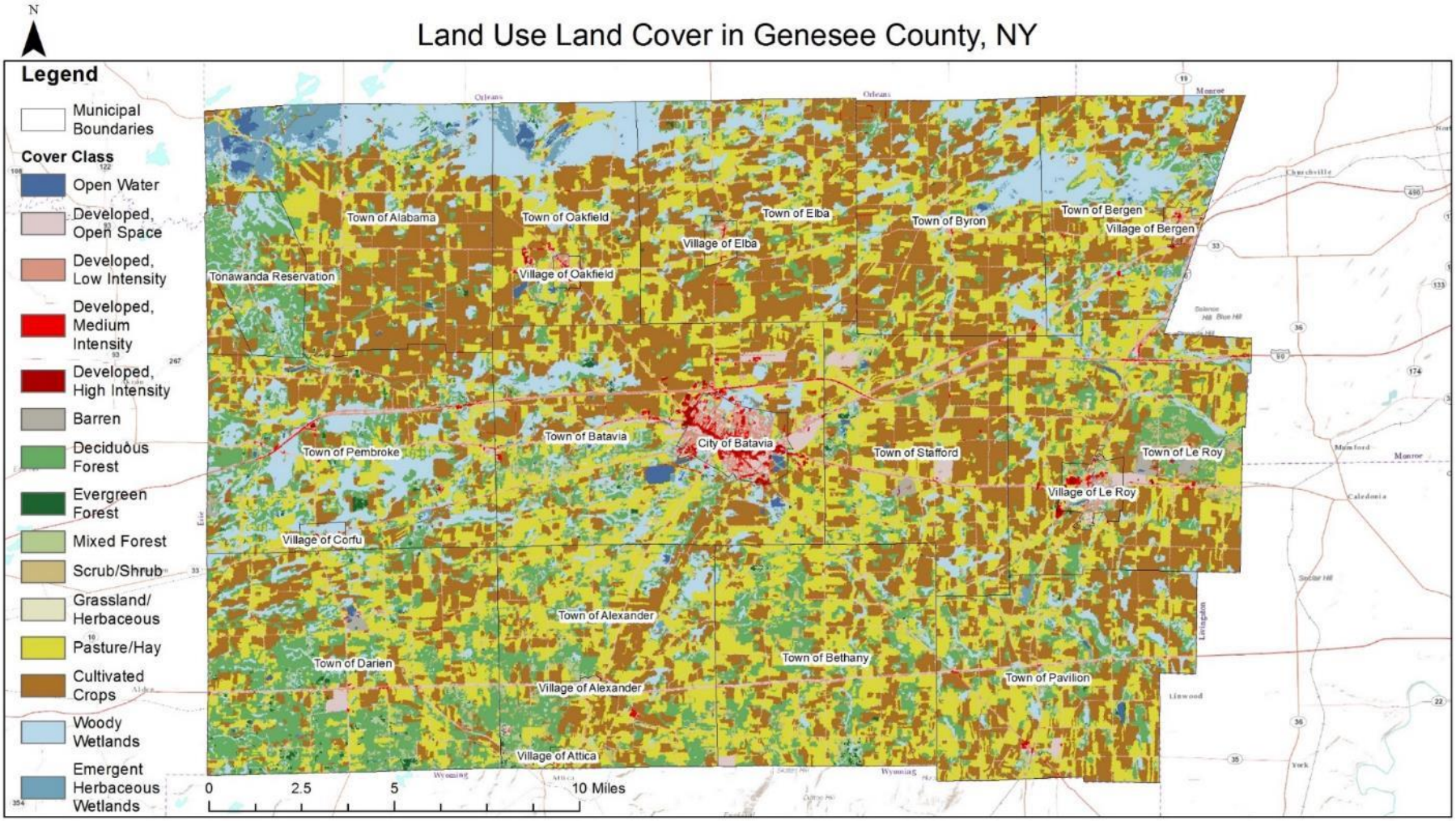
Economic Benefits

- Streamline regulatory process
- Shovel ready sites
- Speed to market
- Competitive Advantage
- Farmland preservation
- Revenue diversification
- Attract new business
- Ecotourism industry

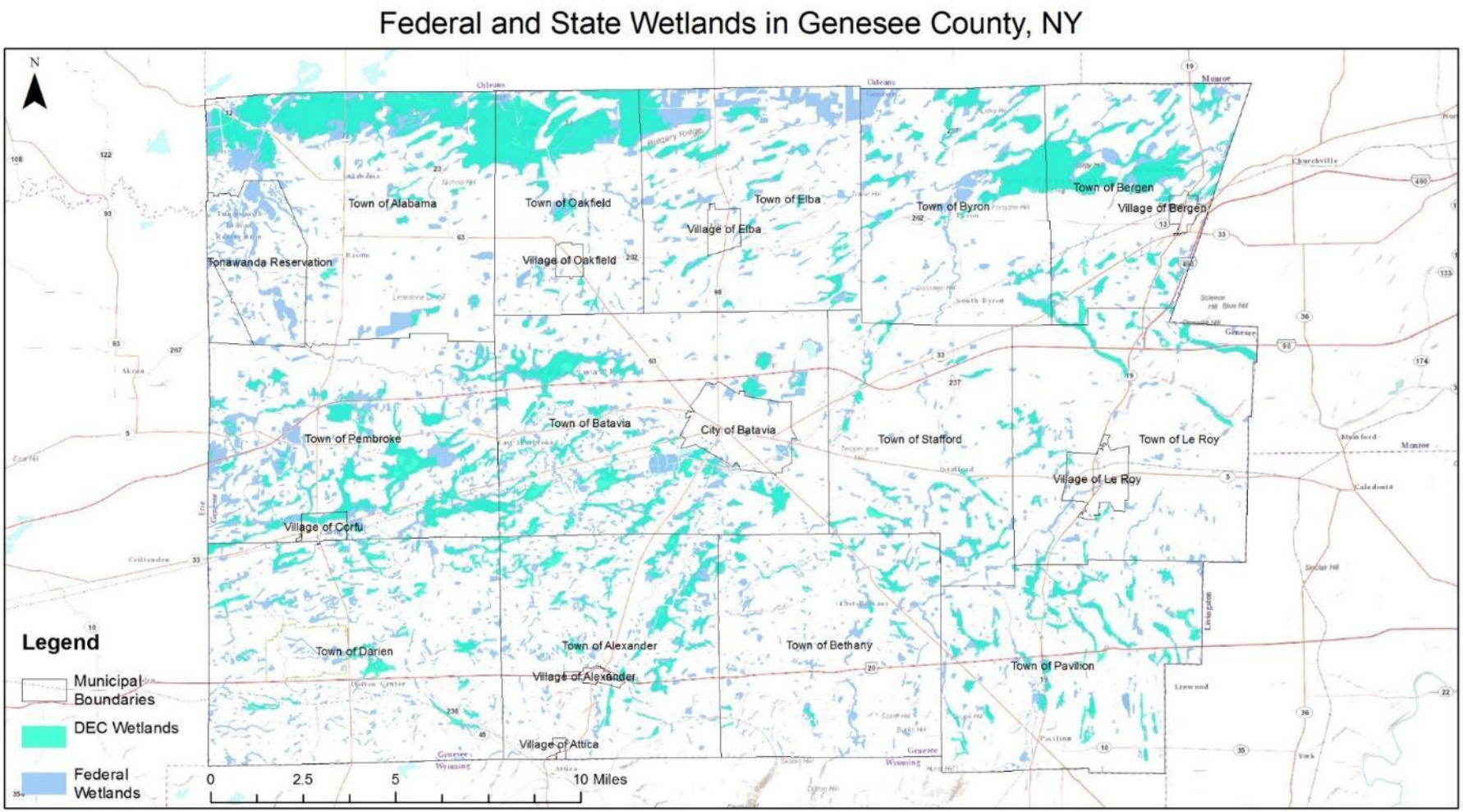
REALITY CHECK: Compiling information about current conditions, natural resources and assessing environmental services is the first step.

DATA

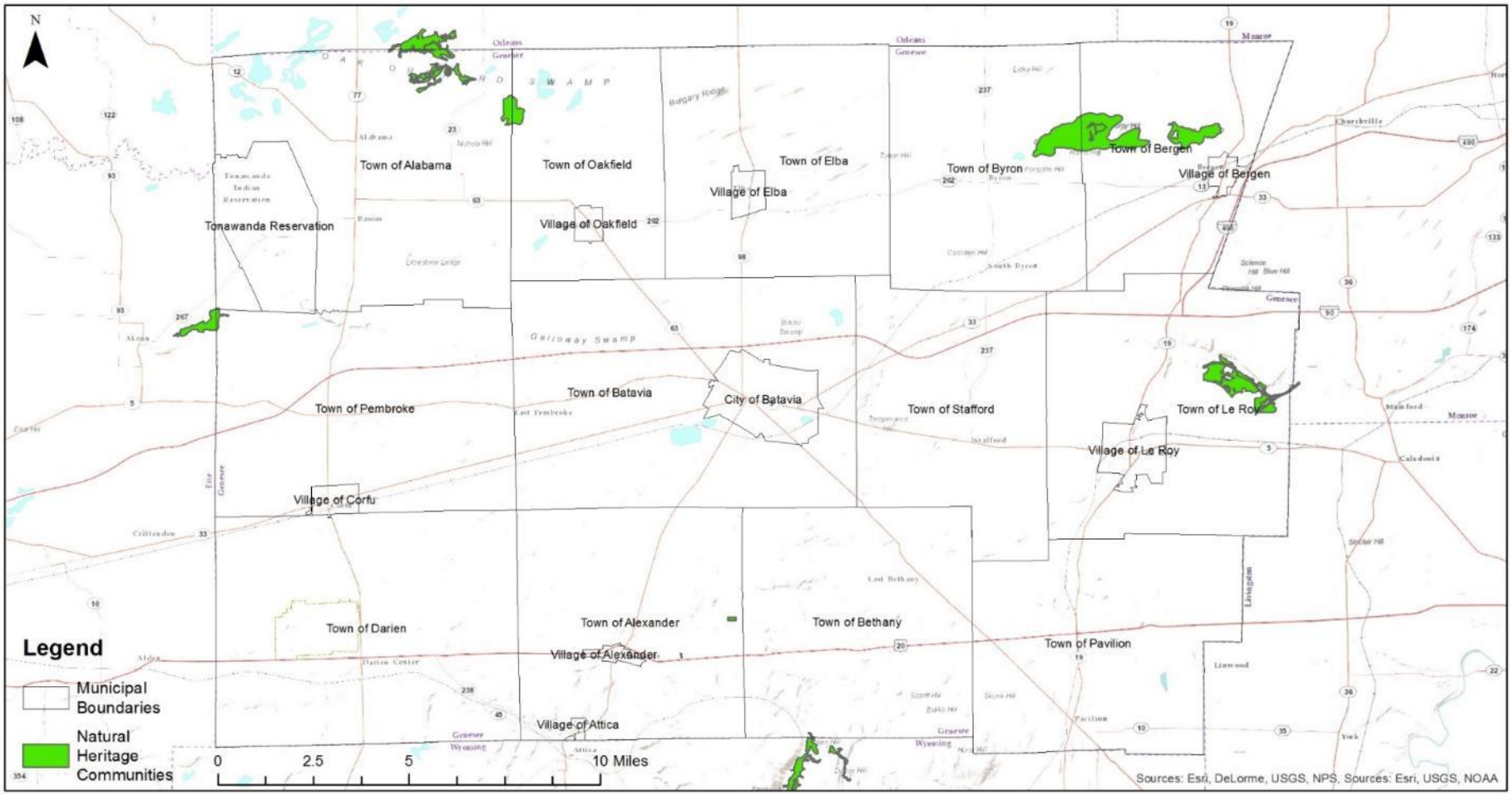
Land Use Land Cover



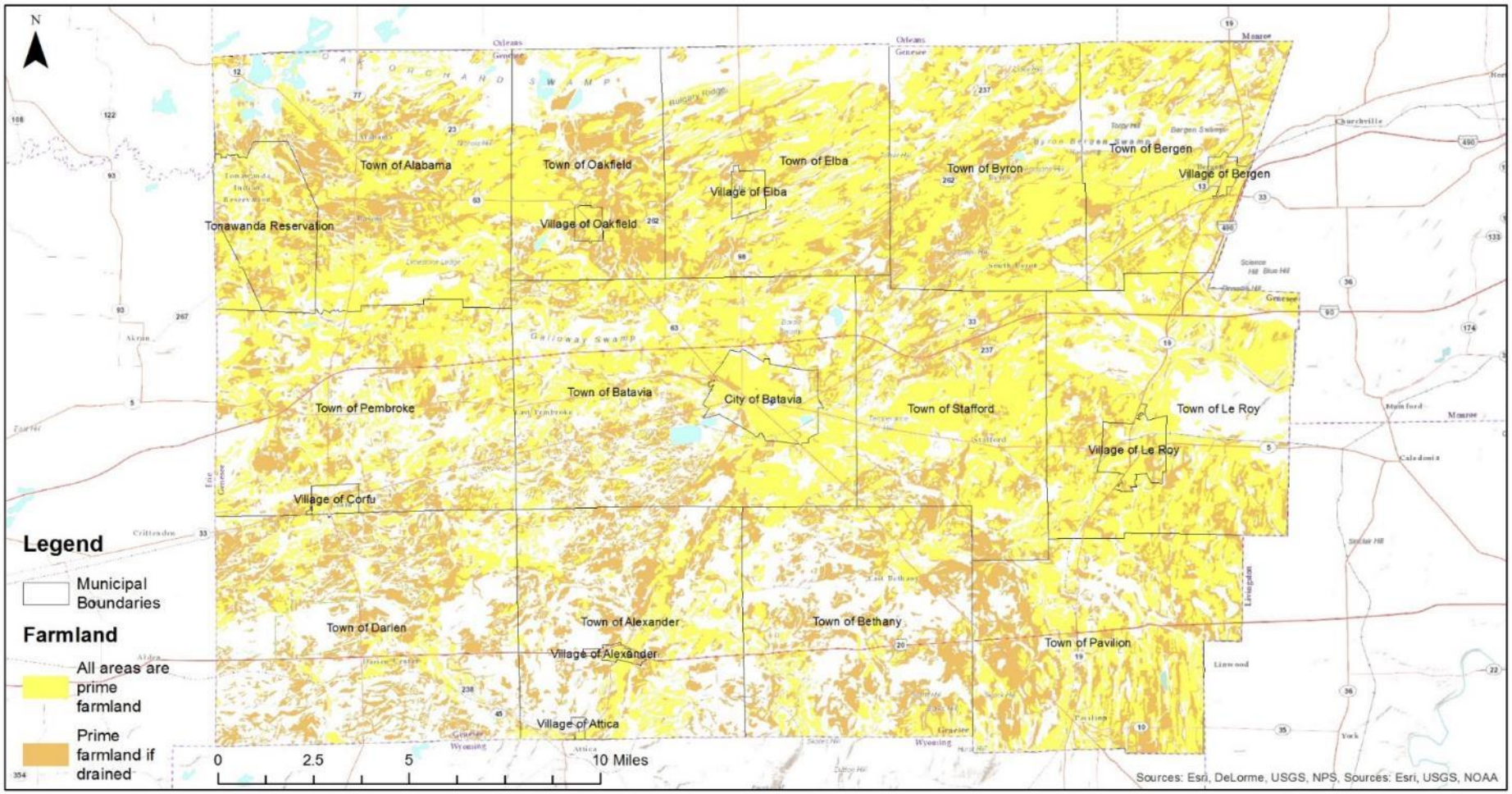
Federal and State Wetlands



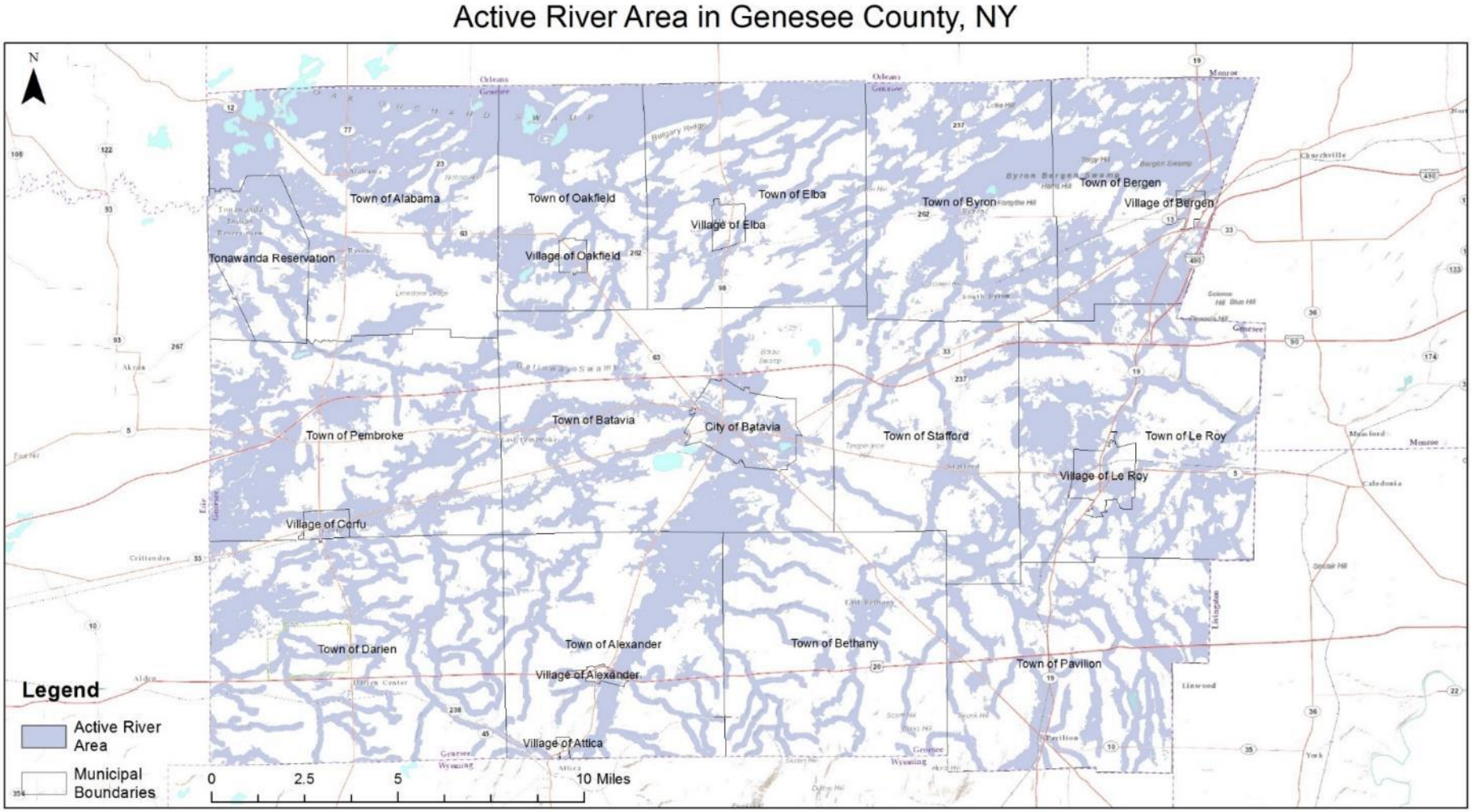
Natural Heritage Communities



Farmland

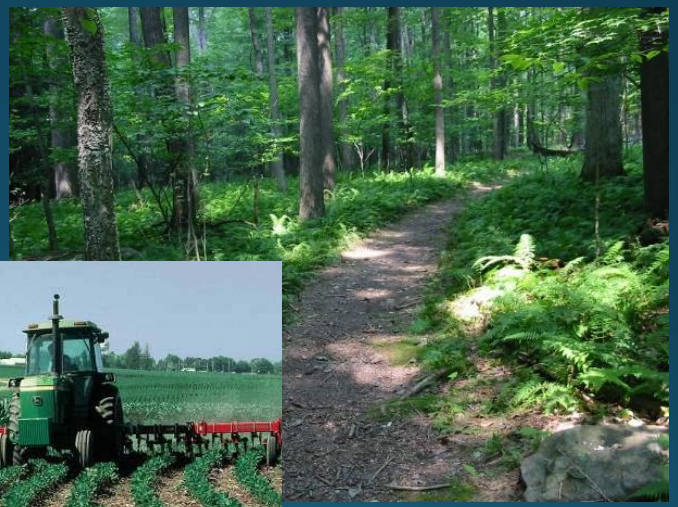

Farmland in Genesee County, NY
N
Town of Alabama
Town of Oakfield
Town of Elba
Village of Elba
Town of Byron
Town of Bergen
Village of Bergen
Tonawanda Reservation
Village of Oakfield
Town of Batavia
City of Batavia
Town of Pembroke
Town of Stafford
Town of Le Roy
Village of Le Roy
Village of Corfu
Town of Darien
Town of Alexander
Village of Alexander
Town of Bethany
Town of Pavilion
Village of Attica
Legend
Municipal Boundaries
Farmland
All areas are prime farmland
Prime farmland if drained
0
2.5
5
10 Miles
Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, USGS, NOAA

Active River Area



SCIENCE (data) + COMMUNITY (people) = VISION (future)

What does your community value most about its natural resources?



Stakeholders

- Local government reps
- Nonprofit organizations
- Community members
- Landowners
- Business owners
- Outdoor recreationists
- Education community
- Academic community
- Etc.

Champions

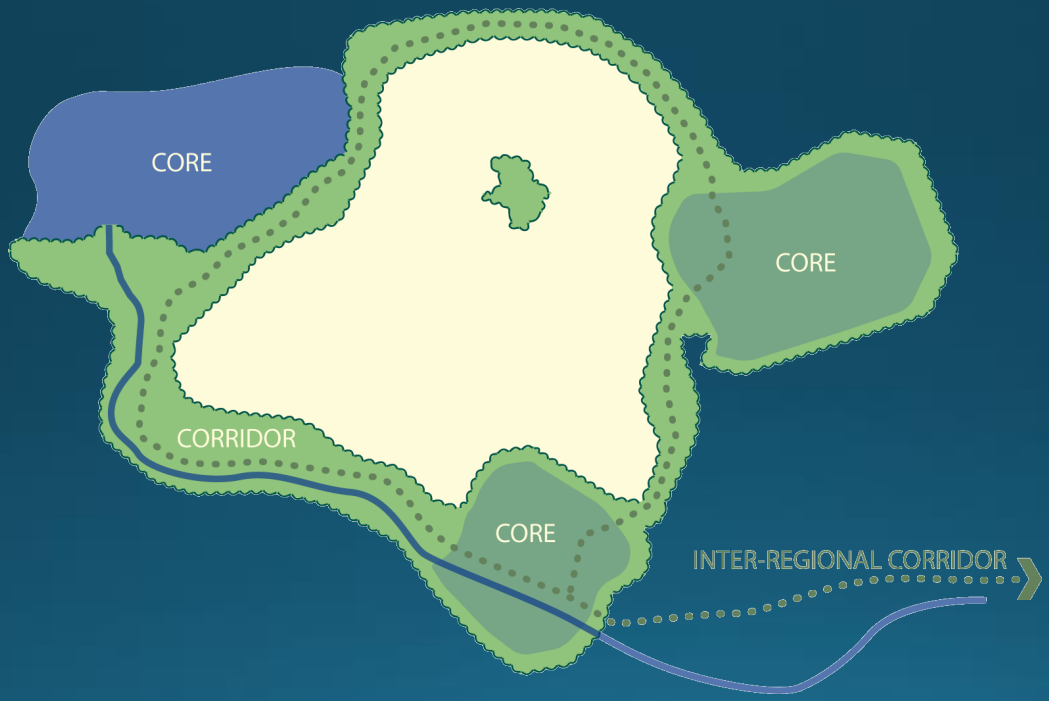
- Lead the charge
- Add legitimacy
- Provide focus
- Rally support
- Network
- Promote a shared vision

Map the Vision

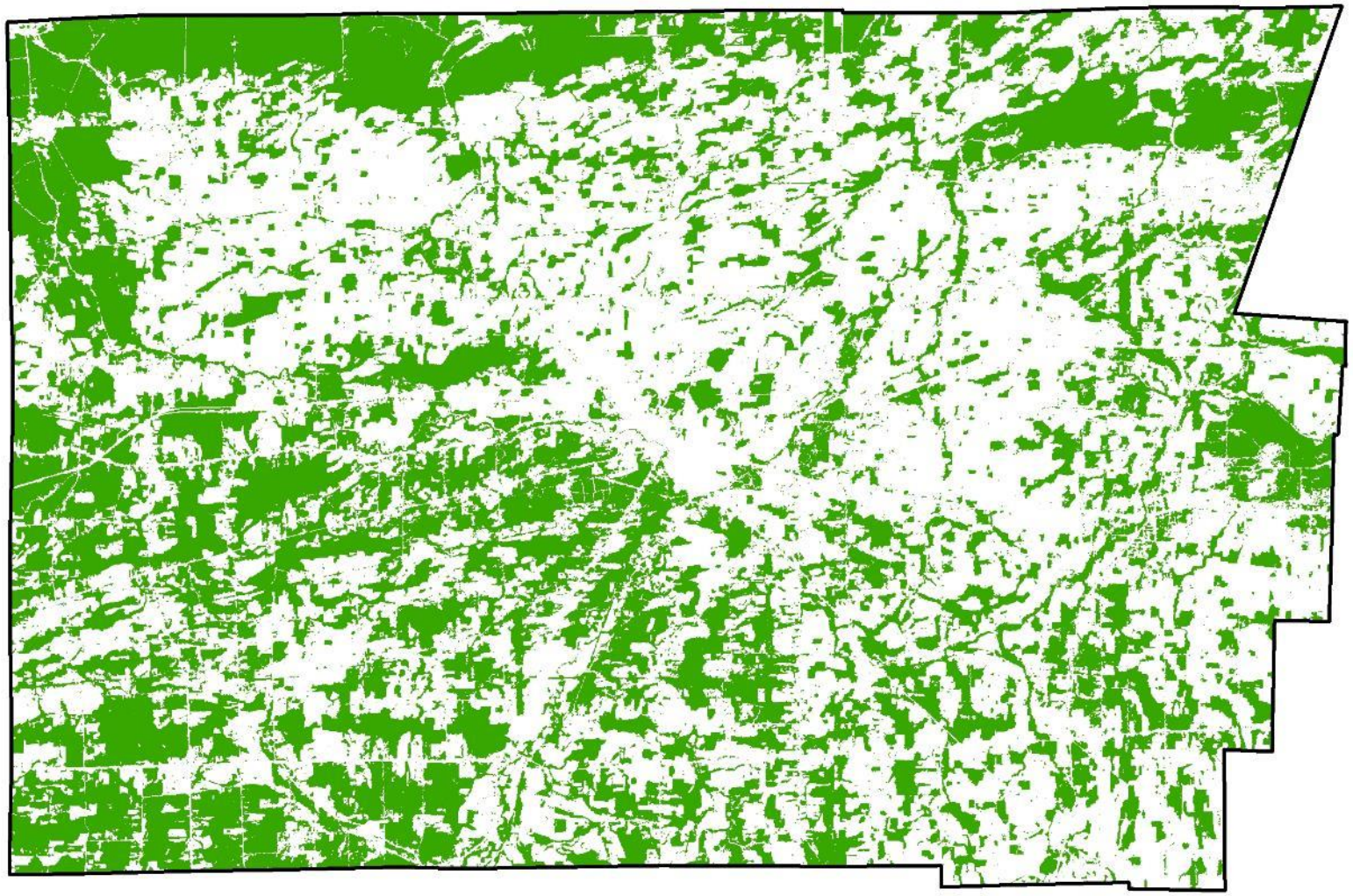
FOCUS

- Identifying/ranking natural assets
- Priorities, risks, opportunities
- Green Genesee GI Mapping Tool

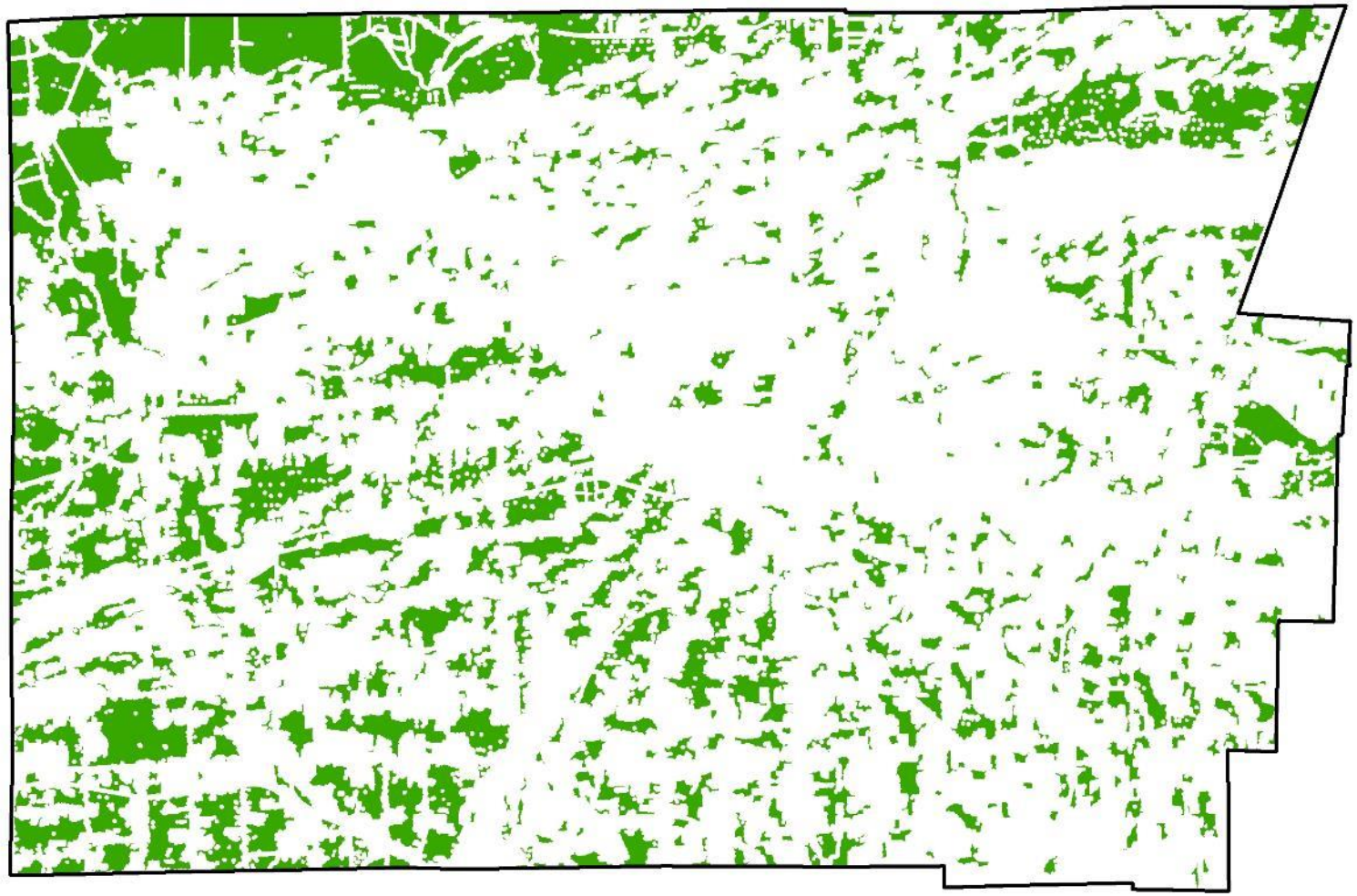
Locating Natural Assets: A Green Infrastructure Approach



Where are our natural assets?



Where are our natural asset cores?



Metric 1: Geometry Score

Patch size and shape affects green infrastructure value

Size: bigger is better

- Larger asset cores generally contain more habitat types
- Larger cores attract recreational activities
- Large natural areas have a positive impact on property values

Perimeter to Area Ratio

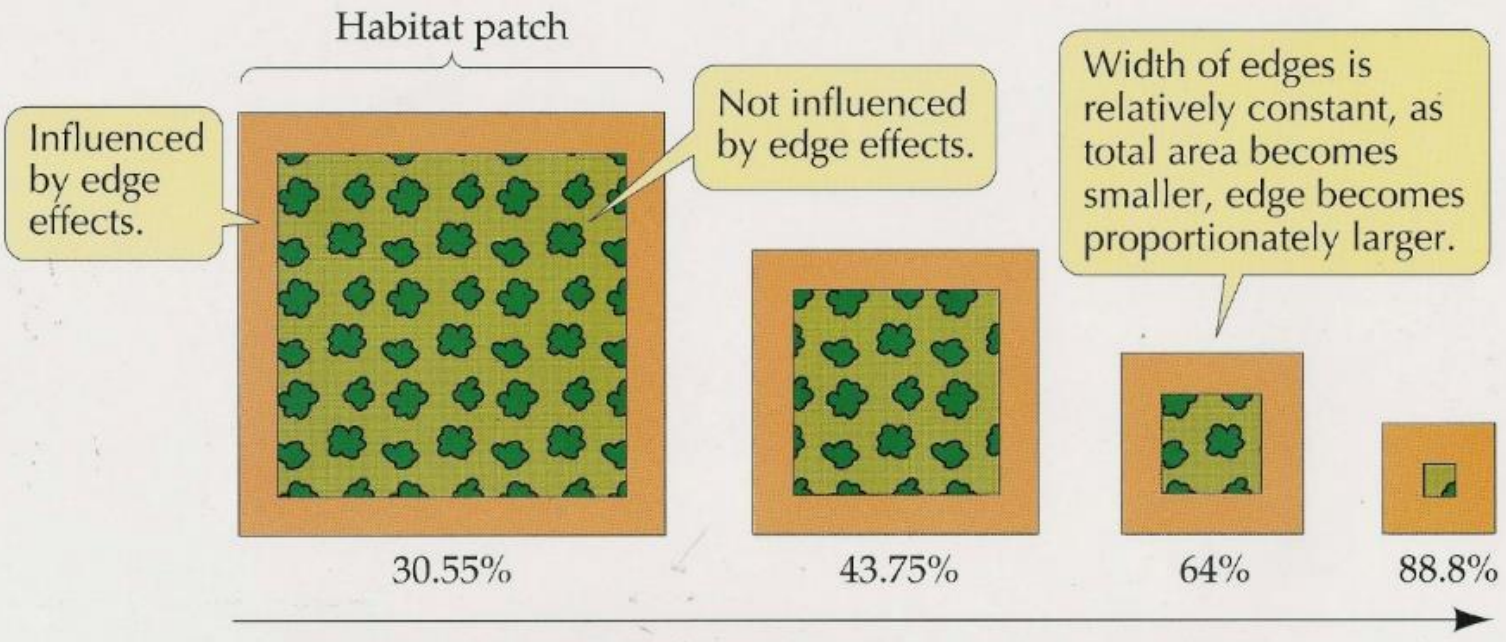


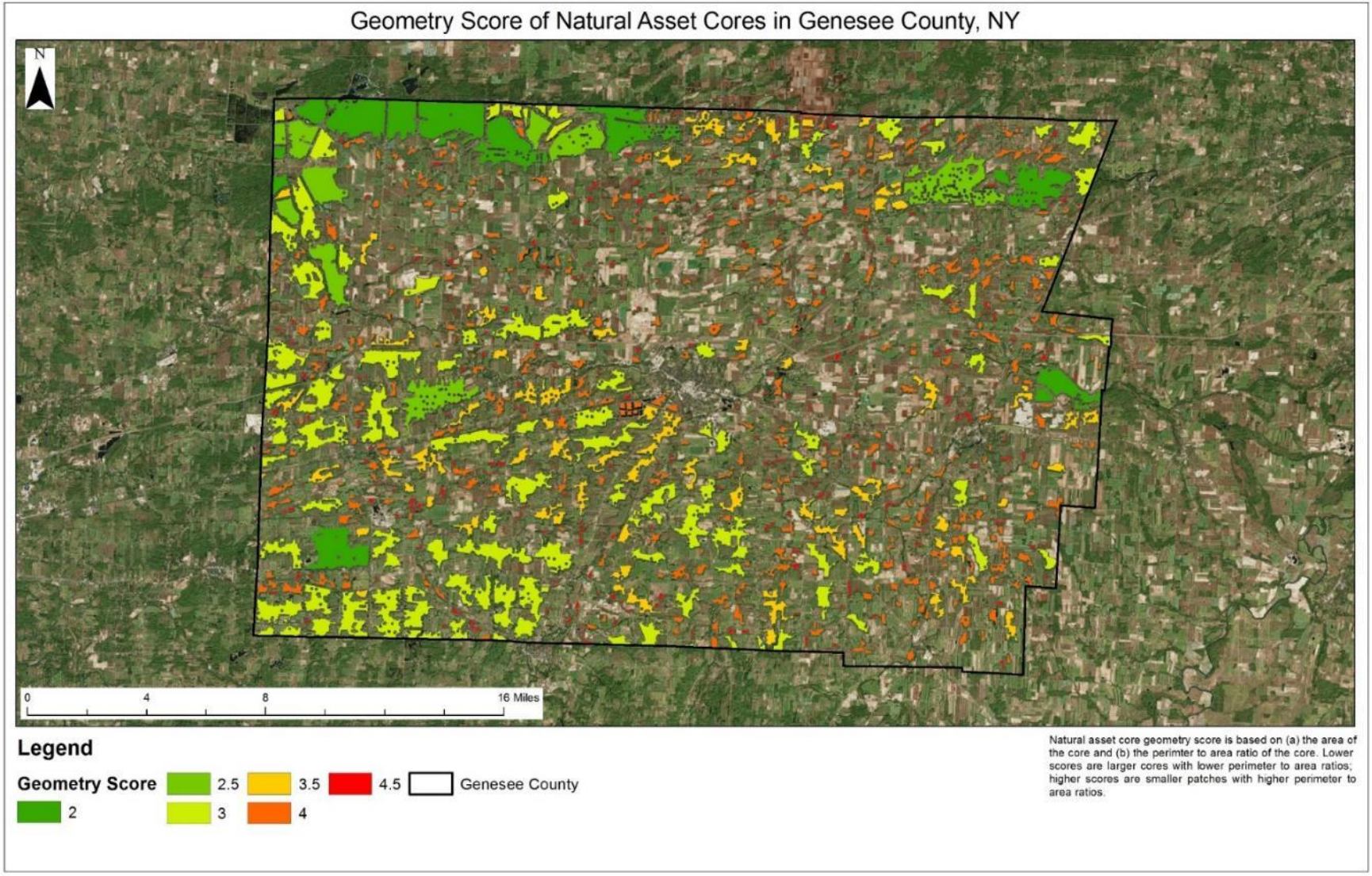
Figure 55.10 Edge Effects

What are edge effects?

- Increased predation
- Invasive species
- Pollution
- Erosion

“Most studies have found edge effects to disappear within 50m of the forest edge.”

Geometry Score of Natural Asset Cores



Metric 2: Water Resources

Ponds, Rivers, Streams, Wetlands

- Surface area
- Use
- Quality

DEC Water Quality Classifications

A – drinking water

B – recreation and fishing

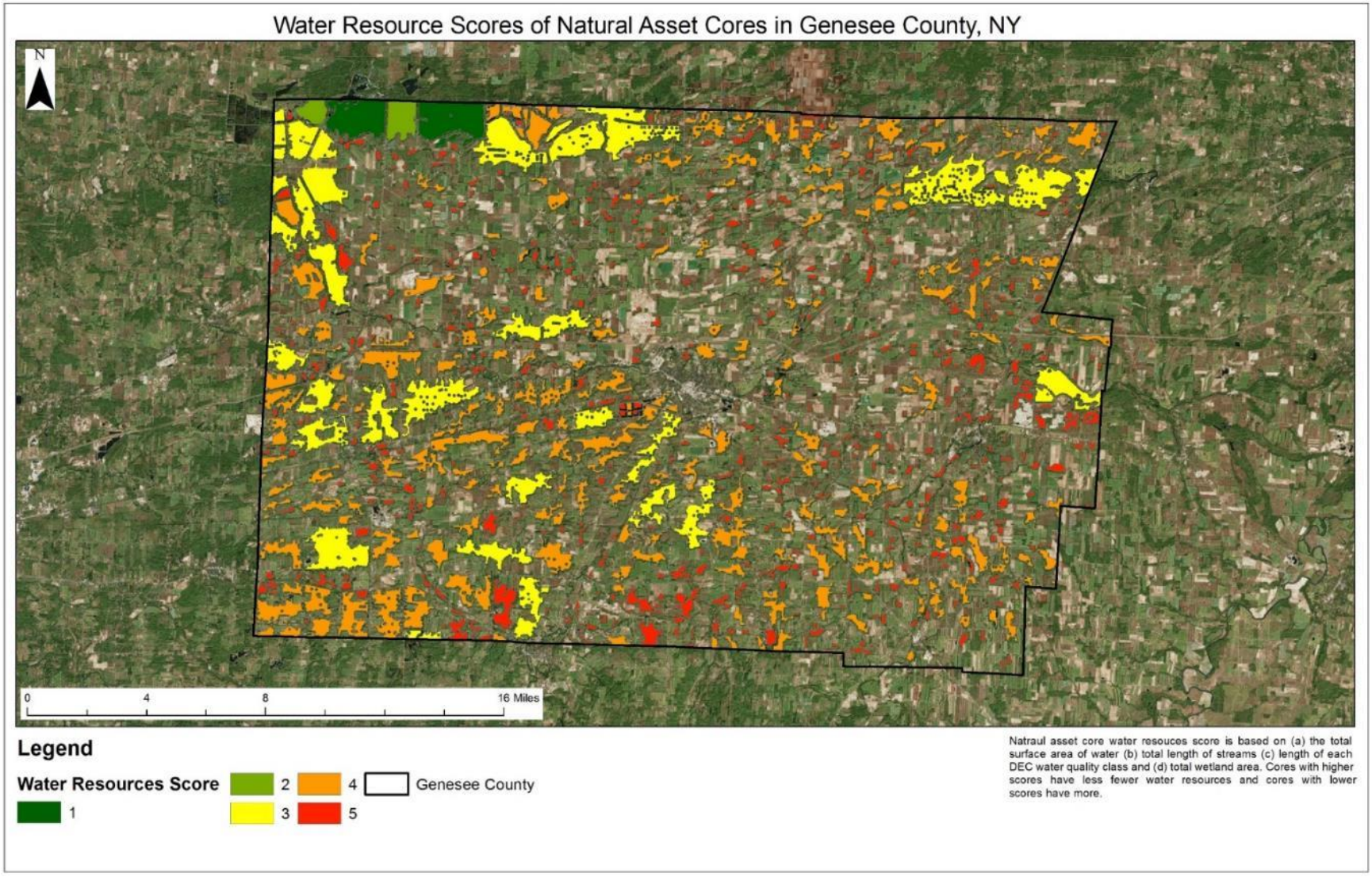
C – fishing (stocked)

D – fishing (not stocked)

Water Quantity

Surface Area
- Wetlands
- Rivers/Streams
- Ponds/Lakes

Water Resource Scores of Natural Asset Cores

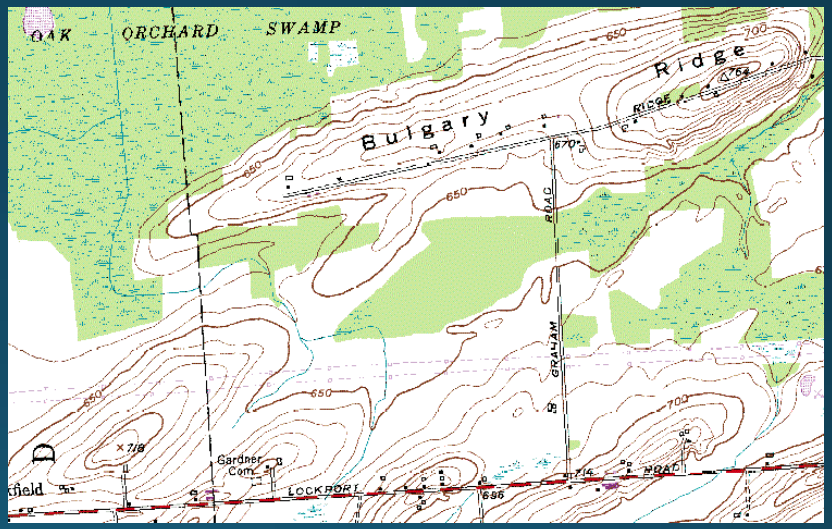


Metric 3: Diversity

- Diverse communities are more resistant to change.
- Rich communities → economic and scientific opportunity

Elevation range

- More elevation range → more habitat niches



Location of Threatened and Endangered Species

Threatened species "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people."

-*Endangered Species Act (1973)*

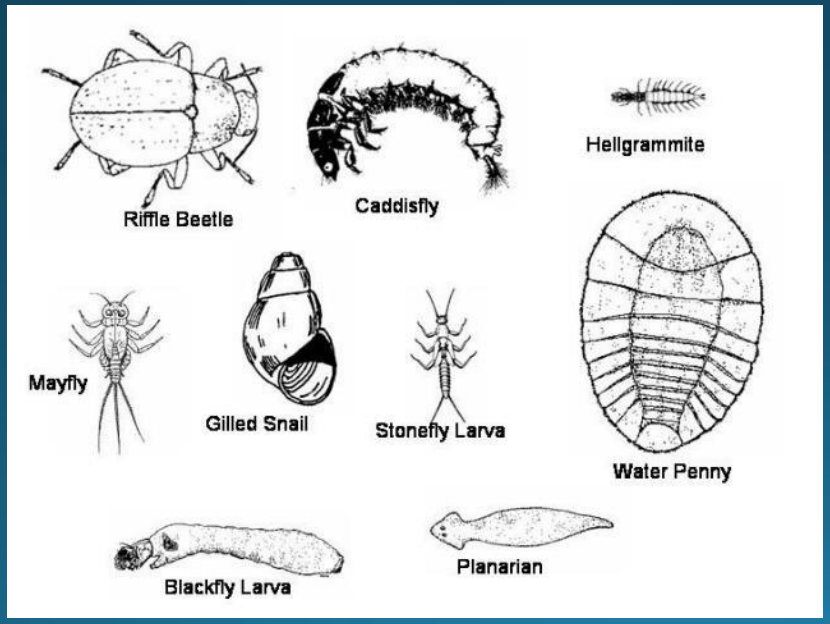
Location of Significant Natural Communities

"rare or high-quality wetlands, forests, grasslands, ponds, streams, and other types of habitats, ecosystems, and ecological areas."

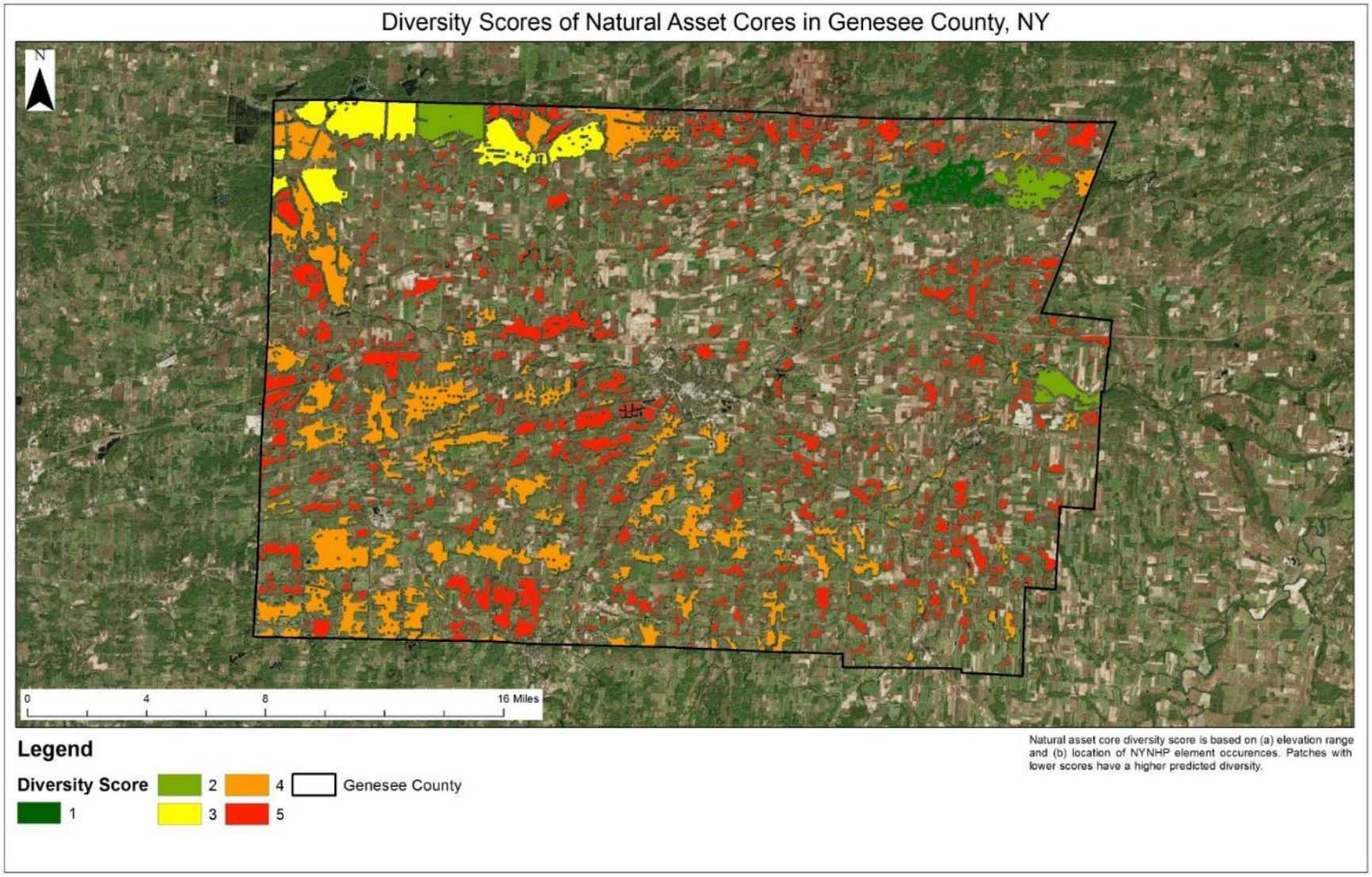
-NYNHP

Predicted Biological Assessment Score

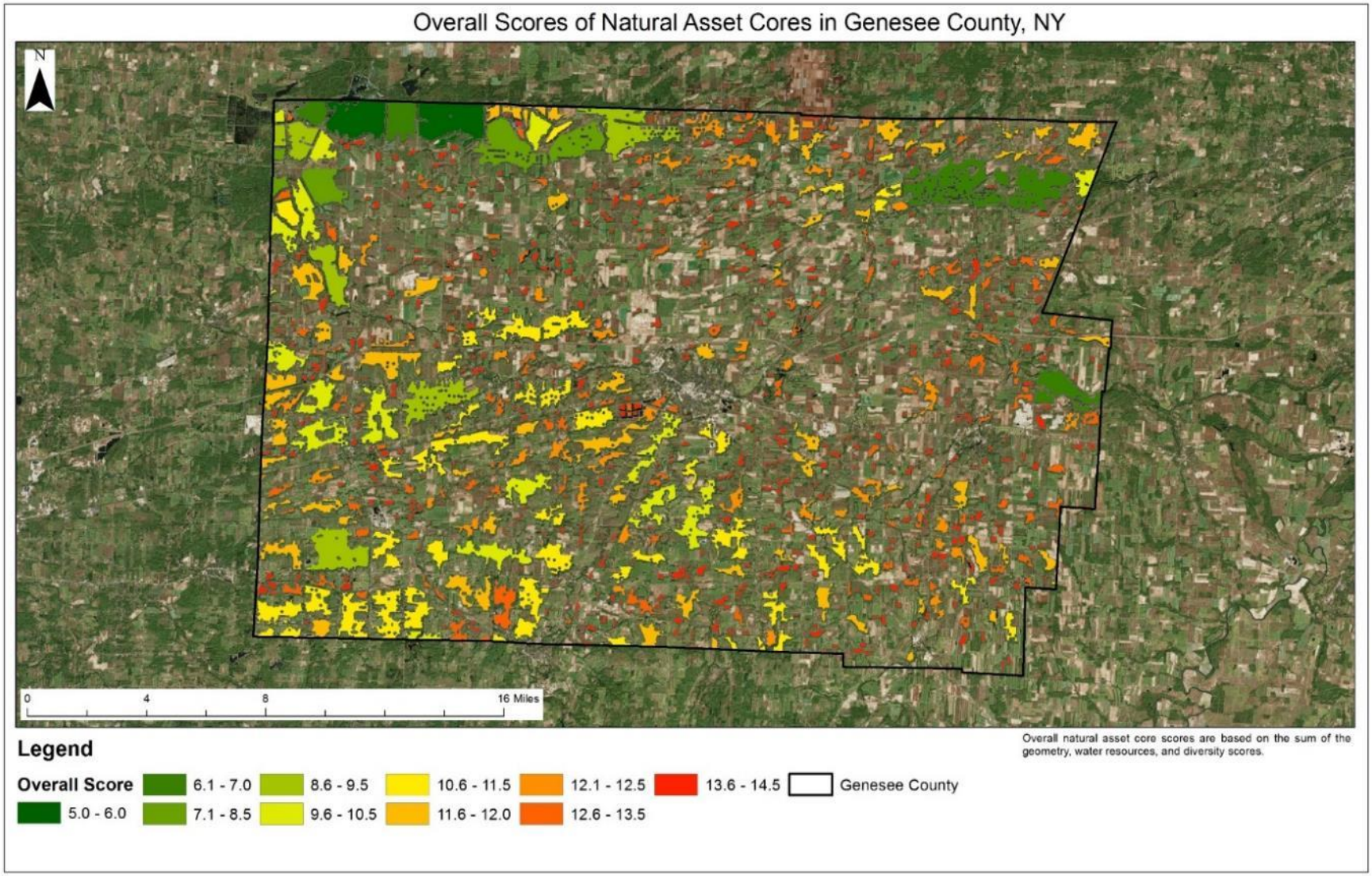
- Predicted macroinvertebrate richness (streams)
- Macroinvertebrate richness is highly correlated with water quality



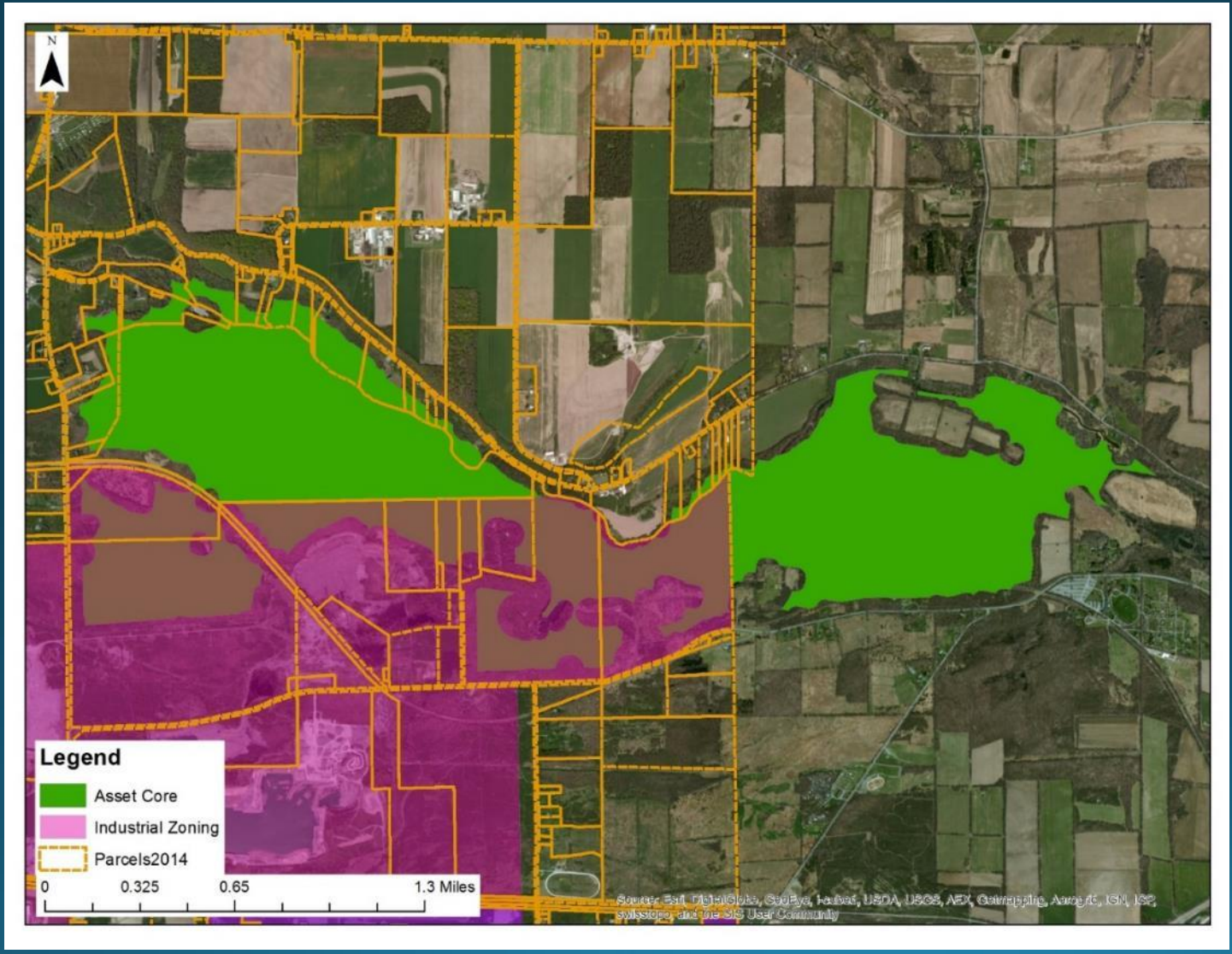
Diversity Scores of Natural Asset Cores



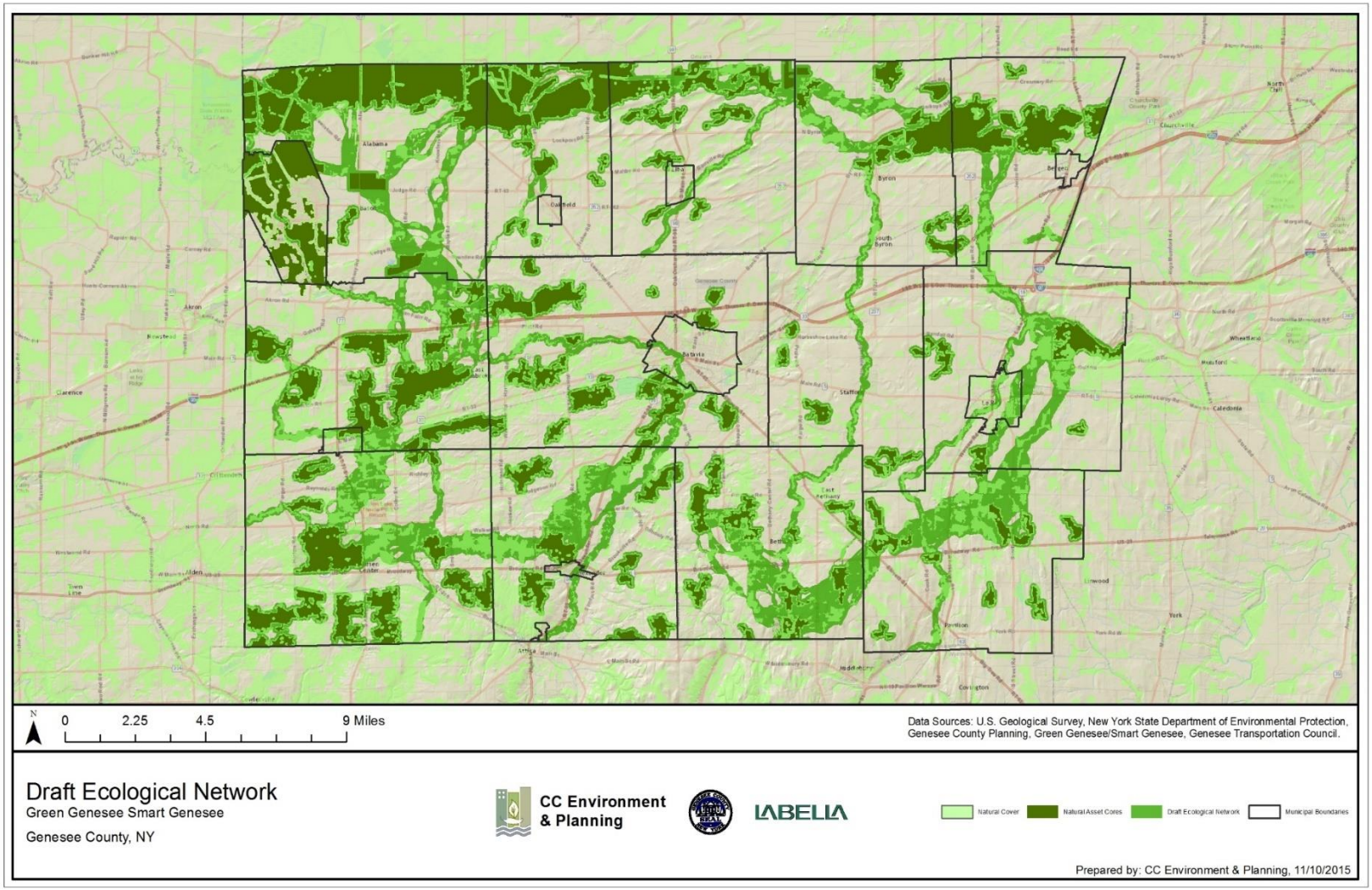
Combine Metrics → Overall Score



Identifying Conflicts



Ecological Network Map



Implementation Rules/Strategies

- Cheaper to protect than restore
- Engage all sectors of the community
- Complete tangible projects ASAP
- Regulations
- Best Management Practices
- **Comp plans and zoning updates**
- Fundraising/grant writing
- Incentives
- Education programs

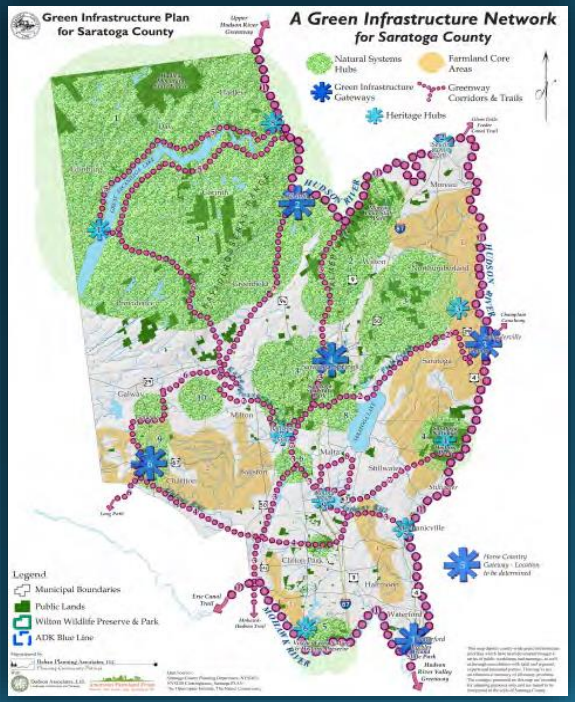
Green Genesee Road Map will be used by public and private entities, prospective developers, regulatory agencies, and other parties involved in making land use decisions.

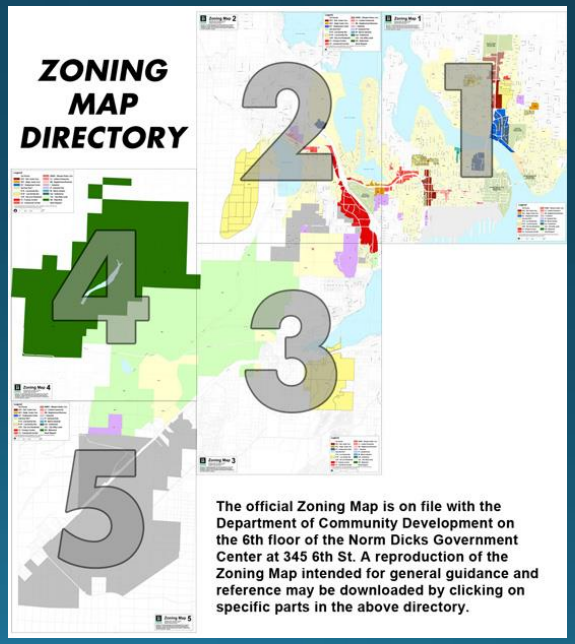
An easily accessible, publicly available tool to help our communities grow in ways that support local economy and create vibrant neighborhoods while protecting our clean water, open space and natural beauty.

Two Parts: Green + Smart

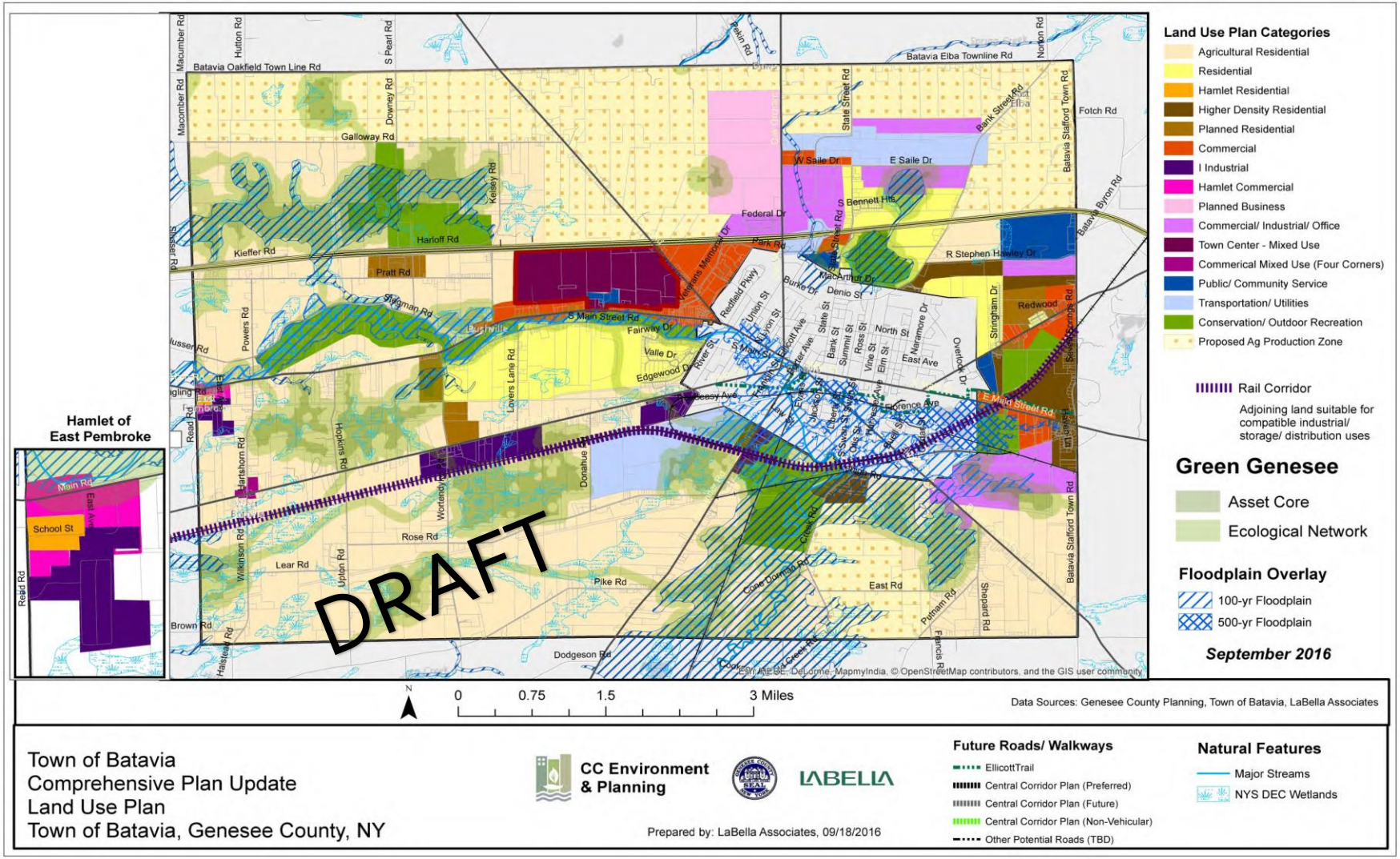
Green is the collection ecological and energy data to create land use maps and energy conservation plans.

Smart is the integration of these into municipal planning and zoning.





GGSG Municipal Plans/Decisions

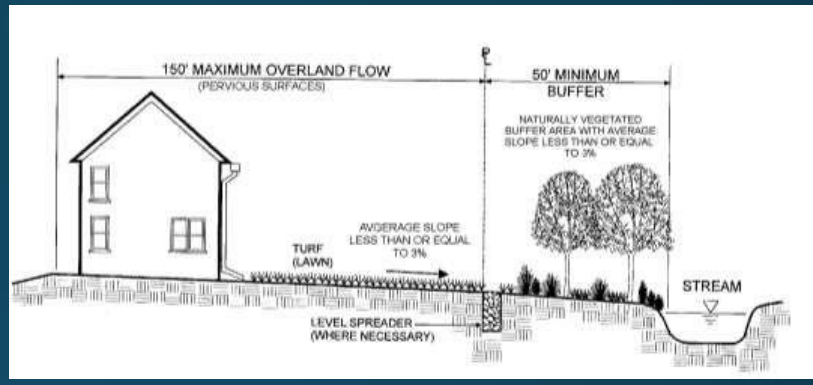


Comprehensive Plan
Goals

- Protect water quality
- Conserve land within Asset Cores and Ecological Corridors
- Maintain historic character of existing Villages and hamlets
- Encourage and accommodate renewable energy and energy conservation

Zoning Tools

- Conserve land within Asset Cores and Ecological Corridors
  - Stream Corridor & Conservation Overlay Zone
- Maintain historic character of existing Villages and hamlets
  - Design-based codes
- Encourage and accommodate renewable energy and energy conservation



Conservation & Stream Corridor Overlay Zones

1 Challenges

- Clear standards/ easy to administer
- Communicate to landowners/ applicants
- Avoid burdensome review process

2 Process

- Municipal workshops
- Examples from other municipalities
- Model regulations
- Hypothetical project at workshop

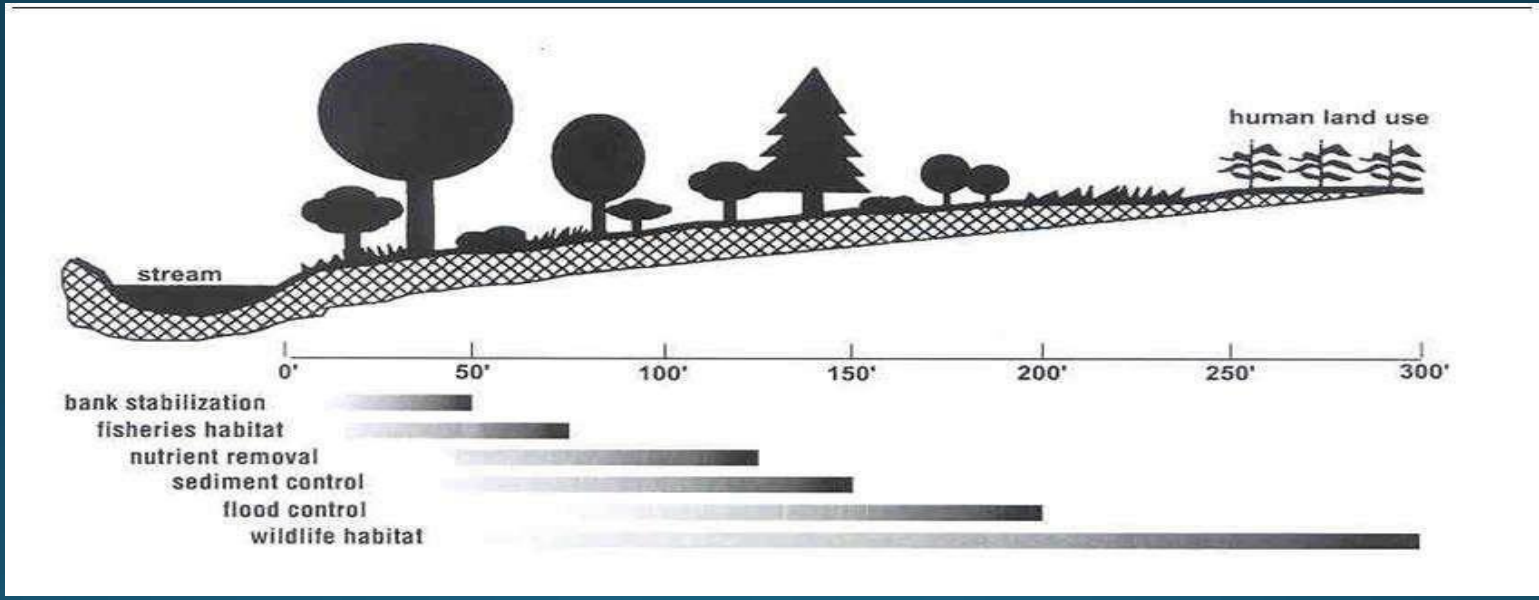
3 Products

- Model regulations suitable for adoption
- Checklist for use during site plan review

Stream Corridor Overlay

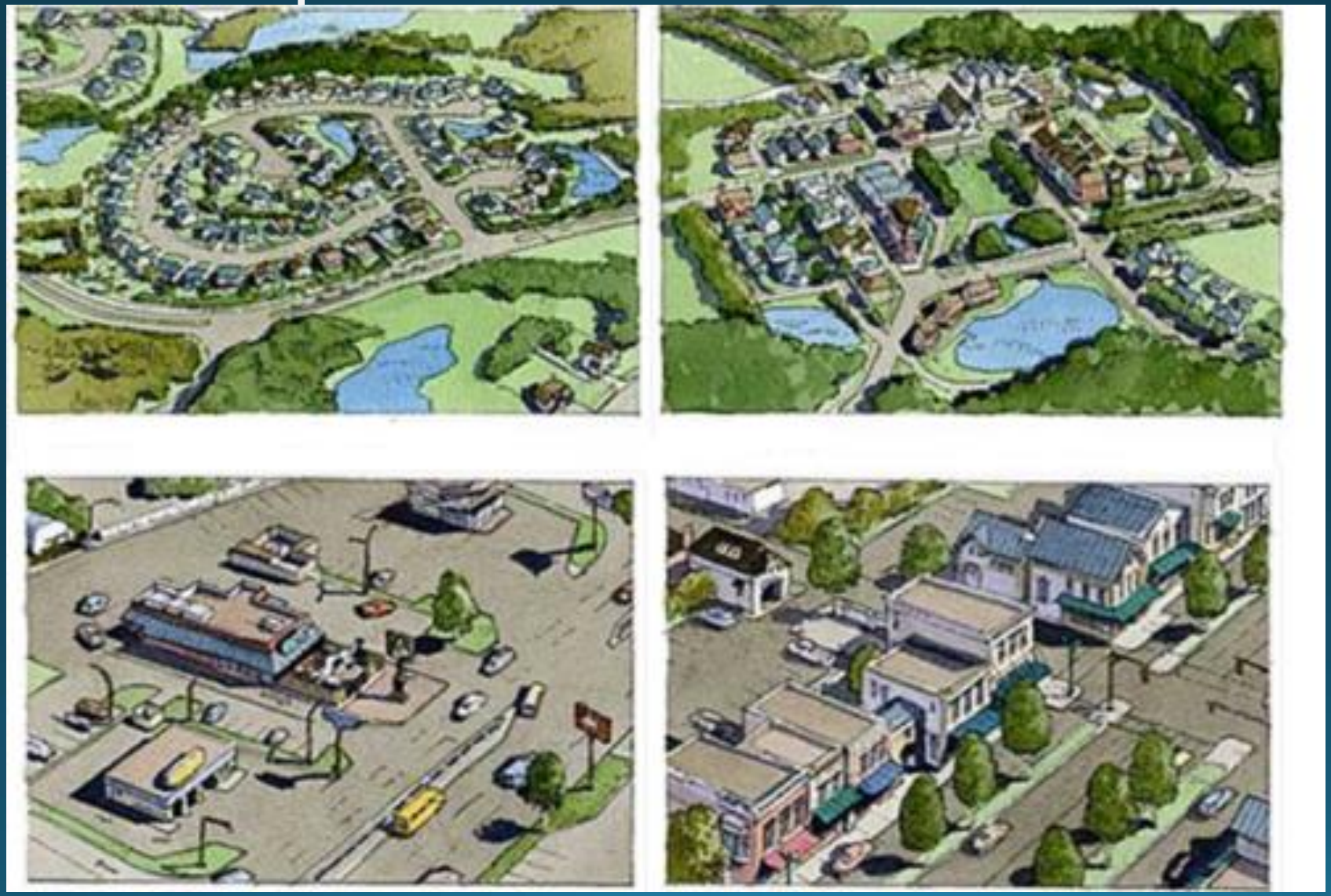
Sample buffers for various environmental quality goals

Limit land disturbance within 100 feet from stream bank



Source: New York State Stormwater Management Design Manual

Development Pattern Matters



Conventional Zoning (Euclidean)

- By itself conventional zoning often undermines desired aesthetics.

Conventional Zoning (Euclidean)

Conventional Zoning (Euclidean)

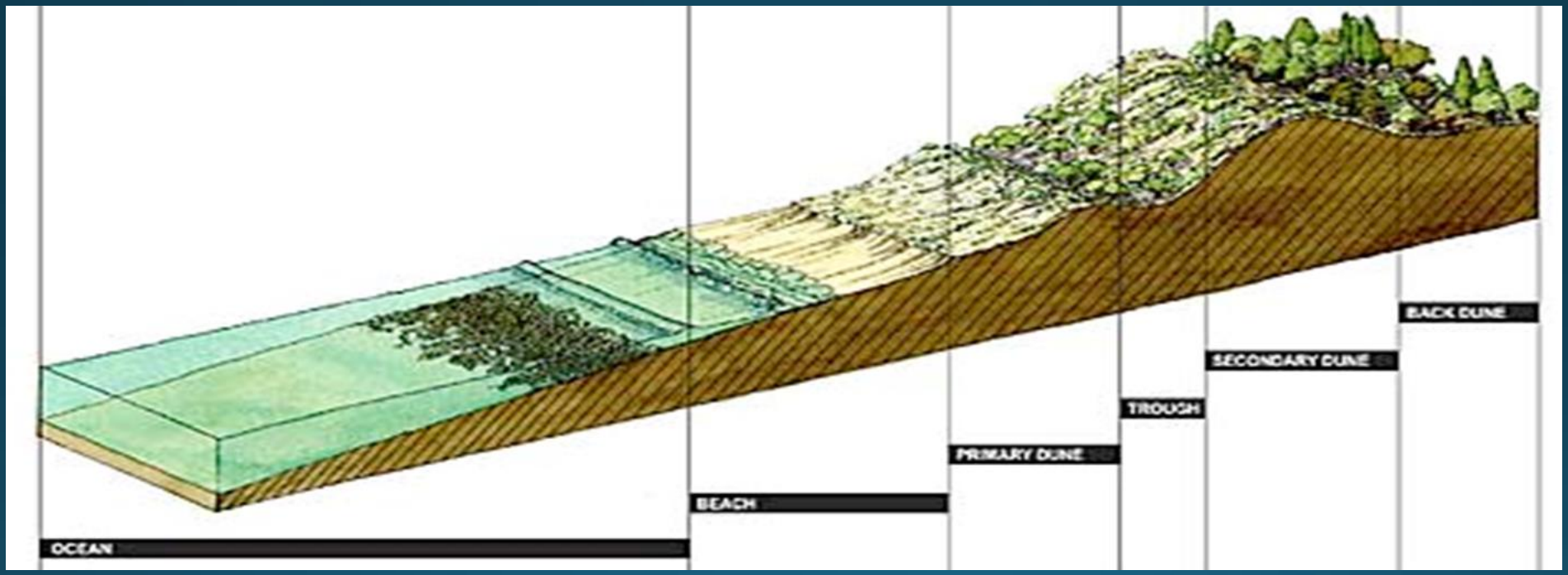
Form-based Codes

- Most design-based codes emphasize traditional development patterns
- Often based on the transect
- Key components:
  - Context
  - Proximity
  - Connectivity
  - Transportation choices
  - Etc.

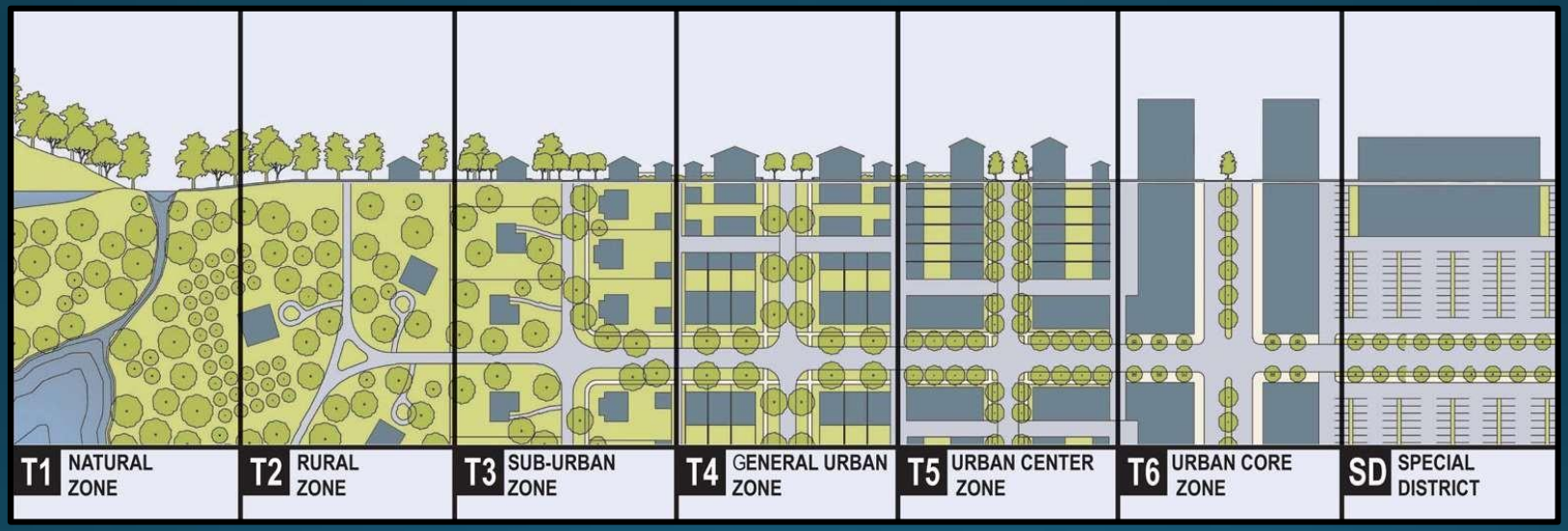
Traditional Neighborhood Development

Typical Suburban Development

The Transect

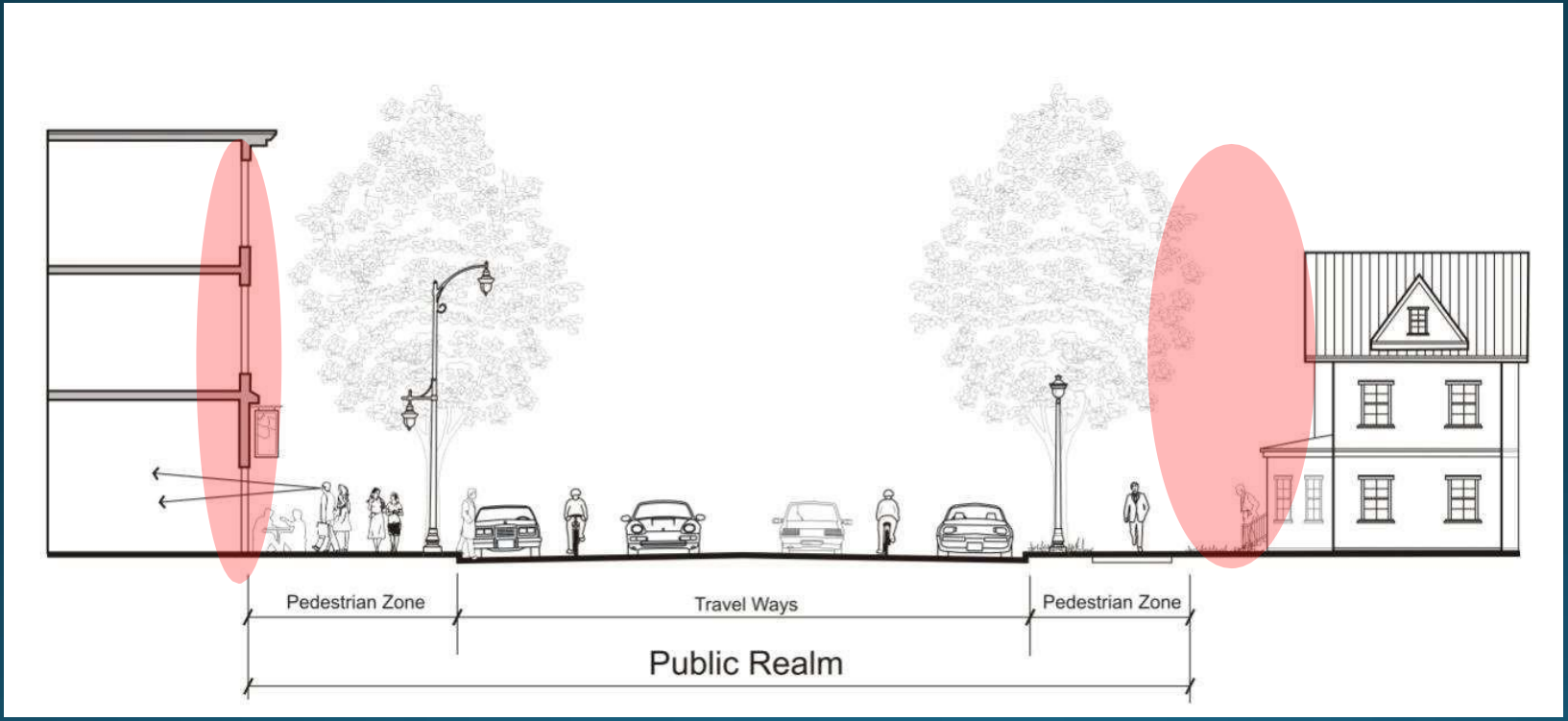


Urban to Rural Transect

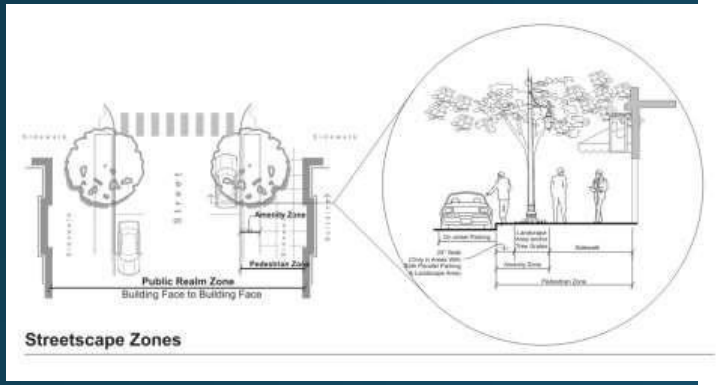


Public Realm

'All streets, sidewalks, rights-of-ways, waterways, parks and other publicly accessible open spaces, and public and civic buildings and facilities.'



Design Principles



Streetscape Zones

B. Design Principles

The primary objective of the SU District is to promote quality development and design that actively engages the street and accommodates all modes of travel. Specifically, the design principles are to:

(1) Emphasize historic and cultural design characteristics from Genesee County. Avoid or minimize typical corporate chain style development.

(2) Provide a safe, efficient, and convenient vehicular and pedestrian access and circulation patterns within and between developments.

(3) Create a cohesive visual relationship between the buildings.

(4) Encourage buildings near the sidewalk and street edge (building line).

(5) Create tree-lined streets that are aesthetically pleasing and comfortable for pedestrians.

(6) Minimize the visual impact of the automobile by focusing site design on the central role of buildings, landscaping, open space, and other amenities.

(7) Create attractive and safe routes for people to walk and relax which link to other areas.

(8) Create an interconnected street system for pedestrian, bicycle, and motor vehicle traffic.

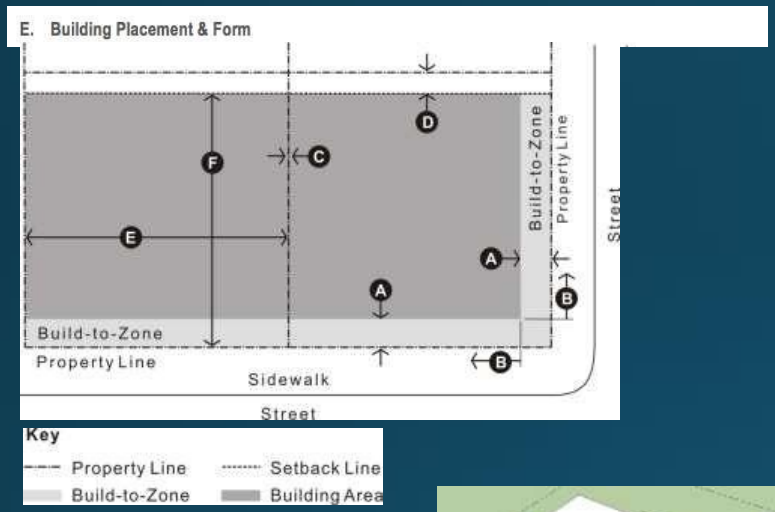
(9) Provide diverse housing options.

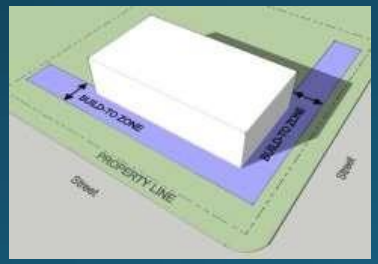
(10) Protect important natural and historic features.

C. Standards vs. Guidelines.

This code includes both standards that are required to be met as well as guidelines that are encouraged, but not required. As such, provisions designated as "shall" or "will" are required, while provisions designated as "should" are encouraged.

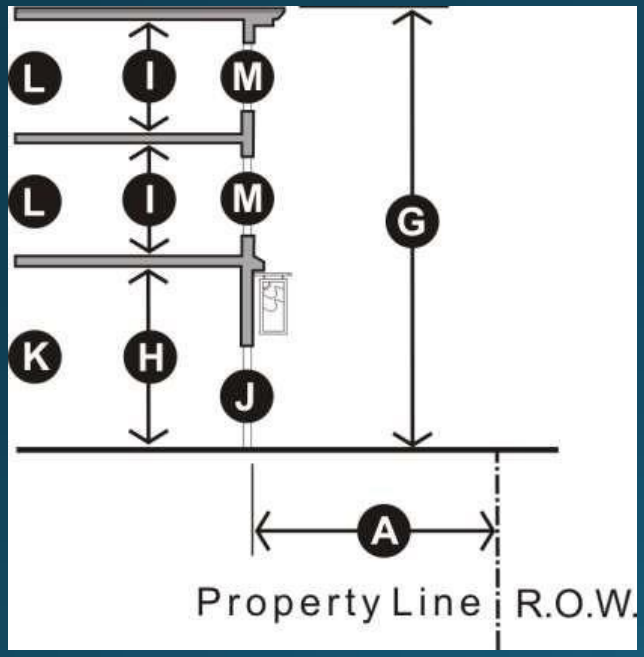
Building Placement & Form





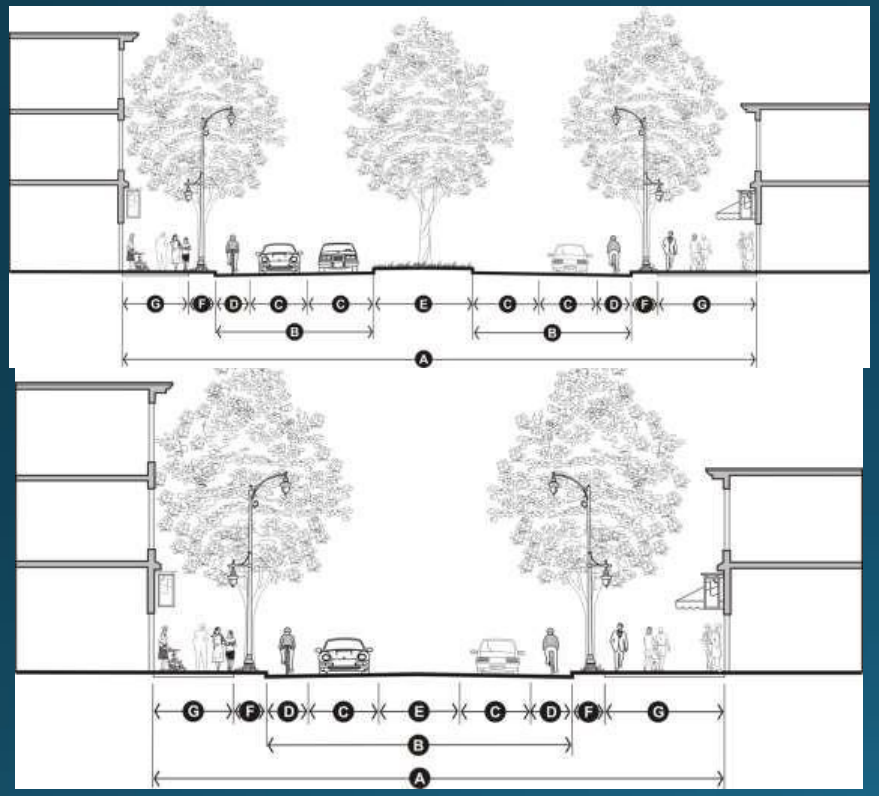
Building Placement		
Build-to-Zone (Distance from Property Line)		
Front	10' min., 30' max	A
Building Facade at Build-to-zone	50% min.	B
On corner lots, both yards abutting streets shall be considered front yards.		
Setback (Distance from Property Line)		
Side, abutting nonresidential district*	0' min., 15' max.	C
Rear, abutting nonresidential district*	5' min., 22' max.	D
Side and rear, abutting residential district*	20' Required buffer	
** Common wall buildings excluded.*		
Lot Size & Coverage		
Width	150' max.	E
Depth	300' max.	F
Lot Coverage (all impervious surfaces)	70% max.	

Building Placement & Form



Building Form		
Height		
Main Building	22' min.	G
	3 Stories max.	
Ancillary Building	3 Stories max.	
Ground Floor Commercial Ceiling	14' min. clear	H
Upper Floor Ceiling	9' min. clear	I
Transparency		
First Floor[1] (Clear windows that allow views into the interior of the building)	60%	J
Allowed Uses		
Ground Floor	Commercial, Service, Retail,	K
Upper Floor(s)	Residential or Office	L

Street Standards



Application		
Movement Type	Slow	
Typical Design Speed	40-45 MPH	
Overall Widths		
Typical Right-of-way (ROW) Width	80'-90'	A
Curb Face to Curb Face Width[2]	27'-46'	B
Lanes		
Travel Lane	11'	C
Bicycle Lanes[3]	5'	D
Median (turn-lane)	10'-14'	E
Edges		
Curb Type	6" Raised	
Tree Lawn	5' min.	F
Tree Spacing	40' O.C.	
Sidewalks	10' min.	G
Lighting	Pedestrian Scale 14'-16'	

[2] Will vary based on number of travel lanes.
[3] If bike lanes are not included space shall be allocated to E, F, or G.

Sub-urban Concept Sketch

Alternative

Roundabout and connection to Main Street.

Design Components

Furnishings should be included in lay areas. Powder coated steel requires limited maintenance. Benches send the message – "It's a place for people."

Street trees are the most important streetscape component.

Pedestrian level lighting extends the use of the street beyond the daylight hours and into the evening, providing for the continued use of public space.

Decorative crosswalks are both highly visible and attractive. However, the continental (white stripes) are very effective as well.

Street & Building Character

Next Phase

- Countywide Resiliency Plan
  - Ground-truthing of original phase
  - Refinement of Green Road Map countywide
  - Incorporate finding of County Hazard Mitigation Plan
  - Focus on water resources and critical water management facilities, support economic development needs, and protect community functions
    - Flood damage prevention
    - Impacts of drought on individual wells, agricultural production, and the long-term viability of the Genesee County aquifer
    - Stormwater management green infrastructure solutions
    - Landscape-scale green infrastructure priorities
    - Recreation
    - Energy

The future will be green, or not at all. This lies at the heart of humankind's most pressing challenge: to learn to live in harmony with the Earth… ~Porritt

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